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ORIGINAL ARTICLES.

PHASES IN THE DEVELOPMENT OF THERAPY.¹

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PREHISTORIC times cannot have been without therapy. Wounds and diseases found sympathy and such aid as bystanders could give. Animals lick each other's bruises and the human animal cannot have been an exception to the rule. Later the power and practice of healing must have been considered a high privilege, for two or three thousand years B.C. the high priests and kings of Egypt practised it. Their technic in many things was excellent. We know their rules for enemata, emetics, purgatives, bathing and frictions, circumcision, and embalming, and the number of specialties was at least as great as it is to-day.

The communication between countries and parts of countries was defective. That is why the healing art remained gross individual empiricism more in some countries than in others. Herodotus tells us that in his own time the sick person in Babylon was carried to the market place—for they had no physicians, he says—to be benefited by the advice of the wayfarers. For it happened at that time, as in 1905 after Christ, that your neighbors boasted of having enjoyed exactly the same disease and ache and knew all about its cure.

About the middle of the fifth century B.C. Hellas, whose first tales of legendary medicine dated back into the Homeric period when "the healing man was of more value than a host of others," had well organized medical schools, though not always unanimous in their teachings, a good beginning of public and private hygiene, and an extensive knowledge of many pathological and therapeutical facts.

Medicine and its main object, therapy, did not remain individual. Long before the Christian era—about 437—the Buddha king of Ceylon, Pandukhabayo, established sanitary institutions, among which there was at least one hospital, and one of his successors—Dathagāmmi, who died 137 B.C.—is said to have supported with ample means hospitals in eighteen different cities and to have had medicines prepared in them by medical practitioners.

Buddha's humane teaching extended westward to Persia and Asia Minor,—not to Judea, however, where we know of isolation houses only for the leprous—thus the king of Usia had to terminate his life—and to Greece and Rome.

The iatria of the Asklepiads and the institutions established by Antoninus Pius were dispensaries and a few clinical hospitals. A few centuries after Christ the Christians found their gratification in helping one another in dangers and diseases, and nursing the sick in their homes and in hospitals. It is evident that the humane element prevailed in most of the cultured parts of the human family.

With us only that is different. Only three weeks ago Town Supervisors refused to the New York City Health Department permission to locate a Tuberculosis Sanitarium in an out-of-the-way mountain region. But it is true they are the Shawangunk Mountains, and the town board is that of Mamakating, and the Indian names still correspond with the tomahawk spirit of the uncouth savage, not amenable to instruction or humanity.

Though the Roman Emperors favored the physicians, medicine deteriorated under secular and clerical oppression. The belief in miracles, spirits and demons, and ascetic mysticism took the place of the naïve, unscientific medicine of older times. Thus medicine perished, though sciences in general were still nursed and though the study of the law flourished. Physicians were replaced by magicians and sorcerers; those few who clung to Hippocrates and Galen were suspected of heathenism. The Christian clergy established its own schools, the most famous of which was that of Edessa, in which the psalms of David and the New Testament were the preparations for medicine. When finally the Christians obtained the political power there came the end of philosophers and physicians. Only after the sixth century did the Benedictine monks begin again the study of Galen. The school of Salerno, five hundred years afterward, contributed its "regimen sanitatis"; which contains dietetics, with a brief pathological, pharmaceutical and therapeutical appendix.

Meanwhile the Arabs studied botany and pharmacology, and used many remedies, metals, narcotics, stimulants, cosmetics and aphrodisiacs. Surgery and obstetrics, however, were thoroughly neglected. Before they had time to influence European practice at all, medicine had a low standing. Jews and the lowest ranks of monks only were permitted to practice. When an illness appeared dangerous, the doctor had to provide a guarantee. When a nobleman died of a venesection, the doctor was delivered into the hands of the family. That was not only usage, it was law according to the West Gothic code. When a slave died in Venice, about 1100, the doctor had to pay; if he were a Hebrew he was hanged. Thus it happened that only loud-

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mouthed charlatans were respected, and low monks, old women, shepherds and mountebanks would render their alleged services in the market places and at their kirmesses.

The first legislative recognition was bestowed on medicine in 1140, by King Roger of Sicily, who restricted the practice of medicine to those who were licensed. The German Emperor Friedrich II. (1224) required three years' study of logic and five years of medicine and surgery, according to Hippocrates and Galen, also a magisterial degree and a State license. A rate for services was established and the physician forbidden to keep an apothecary's shop. King Sigismund appointed a city physician in 1426. The master physician was to have 100 florins annually, the poor had the medicines gratis, the others paid the apothecary. The King adds in the court—if not courteous—language of his appointment "For the big masters in physics serve nobody for nothing, that is why they go to hell." The supervision of medicine was no longer with the clergy.

The numerous universities of the eleventh and twelfth centuries made room for medicine after a while, but Arnold of Villanova says there was nothing in the teaching but grandiloquent theory. In spite of all their learning they "did not know how to apply an enema or to cure an ephemeral fever." The pedantic expounding of adulterated editions of Hippocrates, Galen, and the Arabs was still more perverted by scholastic methods. One of their best teachers, Arnold of Villanova, about 1400, on account of his doubting the propriety of combining dialectics with medicine, was charged with heresy by the Inquisition. He attributed to the drugs an actual property and a "complexio potentialis," which could only be appreciated by reasoning, but by no empirical method. Still, it was proclaimed to be, after all, the most important.

You notice that the history of medicine repeats itself. Four hundred years after him Hahnemann, who was quite learned, picked up from Arnold the idea of "potential" drug action. According to Hahnemann also no medicine was active as long as chemically or microscopically the slightest trace of the original substance could be detected.

John Gaddsdén, in the same fifteenth century, wrote a "*Rosa Anglica*." He eulogizes his own secret remedies, uses liquor as a panacea, hog dung for hemorrhages, and cures the vermin of the eyebrows with purgatives. Possibly it is here that Hahnemann picked up his Psora. Perhaps it is not amiss to remind you that only two centuries ago Paullini wrote his "*Dreck-apotheke*" (dirt pharmacy)—which recommends urine, feces of animals and man, and other sweetenings as all-healers. The best there is in this transgression of Paullini's—who otherwise was quite a meritorious man—is that he lived exactly at the same time when books were written on the cure of disease by whipping, another

by music, another by the breath of young girls. That is, as you are aware, what the elders recommended for the benefit of King David when he was old and decrepit.

Drug therapeutics were visibly aided in the fourteenth century by the establishment of apothecaries' shops, such as those of Esslingen, 1300; London and Ulm, 1364; Nürnberg, 1378; Leipzig, 1409. Regulations for their conduct were made in Paris 1484, Stuttgart 1486, Berlin 1488, Halle 1493.

For centuries, however, the main effort was spent on the search for a universal medicine which prevented and healed every disease, guarded against death, and changed metals into gold. Practitioners would spread the belief in their possessing the gold-making power. Even Robert Boyle, the man who first drew attention to the elasticity of the air, studied it in its transition and change into organic bodies and suggested the agency of imponderables in nature and in the causation of infectious diseases, the very man who died as late as 1691 as President of the Royal Society of Sciences, believed in gold making. He abstained from making it, however, fearing that by so doing he would disturb the equilibrium of the world. No less a man than Isaac Newton praised him for this unselfishness. Gold was a most precious remedy, it needs must heal the gravest diseases, mainly in the rich. Culpepper wrote in 1675: "I fear to view the compound of gold, musk, and lapis lazuli, and horn of unicorn; it is a great remedy and invigorating, but it weakens the purse." Gold was kin to the sun; it healed everything, "unless recovery was contrary to the will of God." The sun tincture, which was said to contain liquid gold, was soon without it, however. Even the books taught that all the gold was found in the refuse. But three drops would save life. Even William Burton speaks of it about the time that Boyle flourished. It was part of the "quintessence," the compound of plant, animal and mineral. Our own Massachusetts and Connecticut Governor Winthrop was after the stone of the philosophers and the all-healer, gold. Nowadays they say gold is made by those who are not afraid of disturbing the equilibrium of the universe.

On the other hand, the most nauseating materials were used as medicines, but chemistry also was studied and many useful preparations were discovered. Bisam, ambra and precious stones, and compounds of numerous herbs and other objects were utilized. The great theriac was a compound of seventy articles. Syrups, pills, ointments, oils and plasters were in common use.

Of the nature of diseases they learned at those times but very little. Even long afterward variola and morbilli are treated as synonyms. All sorts of plagues are mentioned, the sacred fire (erysipelas?) without discrimination. That is why the theory of the modern, mainly Ameri-

can, origin of syphilis could be asserted up to our present time, for skin diseases were general, and were not diagnosed. But the nursing of the sick became a religious duty and a political office. Isolation houses were established and lepra disappeared in a few centuries from central Europe; the Norwegians have accomplished the same result in a more humane way during the last thirty years. That should be a lesson for us who are prevented by a narrow egotism and shortsightedness and the waste of the earnings of the people on wars of conquest and extermination, from putting an end to the great white plague of the modern world. Hospitals were founded and nursing went far enough to become an absurd fad. Elizabeth of Thüringia cleansed the leprous, washed their feet, and kissed their boils and ulcerations. That is why she died very young and was sainted.

Meanwhile therapeutics was not at all simple. The non-clerical physicians had to submit, or were fain to submit, to fast-days, processions, prayers, donations to churches and monasteries, incantations, sympathetic remedies—all for the purpose either of exorcising or of calling the aid of the evil spirits.

A very important progress was, toward the end of the thirteenth century, the foundation of the surgical college of Paris. It was made independent of the clergy and of the medical faculty. With the latter it was in constant conflict; the best minds were engaged in it, and for all time the surgical part of medicine has determined the latter's fate in France. Guy de Chauliac wrote on wounds, hemorrhages, fractures, ulcers, and operations.

Of a similar, perhaps greater influence, was the appearance of formidable epidemics—the black death, the English sweat, angina, typhus, syphilis, which then was more formidable than ever before, and scurvy. They could not be managed according to the books and compelled the doctors to think for themselves.

The Hippocratic teachings, founded upon the observation of nature and a healthy empiricism, got lost during the Middle Ages. Aristotle misrepresented in garbled copies, and Plato, who looked for the explanation of material facts in mere reasoning, controlled what should have been medical thinking. The medicine of the Arabs was hated by most of the Christians because it was infidel.

Gross superstition was rife, in addition. Miracles were performed as in antiquity. Suetonius tells us that Vespasian cured the blind by his saliva and the lame by his touch in the temple of Serapis at Memphis. According to Nepotianus the right toe of Pyrrhus of Epirus cured diseases and deformities, "*remedio erat si cuius renes tumentes eo tetigisset.*" That is why when the body was incinerated the beneficent toe remained intact and could be preserved in a gold box in the temple of Dodona. Such practice was continued in the Christian middle age. Scrofula

was cured by the touch of Edward the Confessor and Phillippe of France, and Olaf of Norway in the eleventh century. So it was called the King's evil. They lived at the wrong time, however, they required physical touch—to-day distant treatment is preferred. Both are of equal efficacy.

The inheritance of a glorious past was forgotten. The cloaca maxima of Rome, erected two thousand years previously, was disused and survived in ruins, and the 800 baths constructed in Rome within 600 years, between 400 B.C. and 180 A.D., were neglected.

Physicians were not trusted, still they were made responsible, not only for individual cases but for natural events. During an epidemic in Prague, 1161, on the charge of having poisoned the wells, 86 Jewish physicians were burned to death. Before the time of Pope Urban IV., hundreds were burned. John of Bohemia, the same who fell in the Battle of Crecy, suffered from his eyes. In Breslau he consulted a French oculist, who, because he could not effect a cure, was drowned in the Oder; and centuries afterward Helmont was imprisoned by his Bishop because he doubted the therapeutical competence of religion.

Pietro d'Albano followed the teachings of Arab medicine, the only one which clung to Hippocrates. That is why he was to be burned. But he outwitted them by dying in their dungeon, 1250 A.D. The pious people, however, took their revenge on Cecco d'Ascoli, whom they did burn in 1257. Still Venice appointed in 1348 three physicians of public health, with the right to isolate houses and districts for forty days—the first beginning of our quarantine. During the fifteenth century large cities of Germany established the office of City Physician.

The period of religious reformation was also the source of some independent endeavor in medicine. It is true that Luther, Calvin and Zwingli established incontestable religious autocracies in place of those they had overcome, but they could not help raising doubts and independent thoughts in many minds. Luther himself thought very little of doctors. He employed them but did not pay them. He recommended his family physician to the Elector of Saxony by writing that he was all right and cheap; the only thing he ever gave him was a glass of beer. That was his clerical fee. Calvin did worse—he burned Serveto.

One of the mooted questions about that time was that of the Arabic and the Hippocratic venesection. It shows to what extent apparently small things may embarrass human minds, mainly when the stock of actual knowledge is small. The Arabic method consisted in the opening of a vein at a distance from the diseased part; the Hippocratic, in close proximity to it. Peter Brissot, professor in Paris, favored the latter, and caused the division into contra-Arabists and Arabists. This dispute lasted long after

Brissot's death—to the end of the sixteenth century. His teaching was claimed to be as heretical as that of Luther. But after a while the Faculty of Salamanca and Charles V., to whom appeal was made, decided in favor of the Hippocratic method and of the dead Brissot.

About the same time Germans, Dutch, Italians and Swiss studied botany, mineralogy and zoology. Directly and indirectly therapeutics became enriched. The new anatomy was the best aid of surgical therapeutics. For internal diseases blood-letting was still the main topic of discussion, and Botalli was the Bouillaud of the sixteenth century. His teaching, however, was declared heretical by the Paris Faculty. Drugs were nearly all vegetable, in very complicated formulas, mostly. Metals were disdained, but mineral springs were much used. Italian surgery was most benefited, German almost not at all, the French very much indeed. It was mainly Ambroise Paré (1517-1590) who rejected Vigo's doctrine of the poisonous character of shot wounds, ligated arteries instead of cauterizing, limited the use of the actual cautery in general, abolished castration as a part of the radical operation for hernia, introduced the truss, improved trephining, and treated the prostate as the frequent cause of strangury. Never was there a man who like him enriched therapeutics, never a cooler and less prejudiced mind (in spite of his participation in his century's belief in witches and sorcerers). "A remedy that has the stamp of experience is better than a new one that was just invented"—that is one of his principles which might be placed over the entrance of every one of our clinics. Nor was his courage of a low order. In the face of the jealous medical brethren who, moreover, hated him because he wrote French and not Latin, and of the supercilious courtesans, he denied the therapeutic effects of the fabulous unicorn, whose very existence he was bold enough to question. By one of them he was furnished the final altogether incontrovertible evidence—"The King has at St. Denis the horn of a unicorn for which he refused 300,000 francs." No further proof was required.

The plague was mainly treated by the theriac. Syphilis, an old disease, but very frequent about and after 1500, was feared by the regular physicians, many of whom ran away from it. Mercury soon became the general treatment, mostly in inunctions, also in fumigations and internally. Guaiacum was praised by Hutten. Cinchona, sarsaparilla and sassafras were frequently employed, but still the imagination of the uncultured people of all stations clung to astrology and the horoscope. It was—with a number of others—Paracelsus who, in his iconoclastic furor, cut loose from them. He claimed that the diseases should be named according to the drugs that cured them. In this respect he was imitated by Rademacher 300 years later. His principle of treatment was: *Similia similibus*. That was copied several hundred years after-

ward by Hahnemann. His main remedies were: Antimony, gold, mercury, silver, copper, lead, sulphur; but also preparations taken from those drowned or those cut from the gallows.

Chemistry obtained a certain degree of independence in the seventeenth century. Surgery and obstetrics made but little progress, but many new drugs were introduced, mainly ipecac and cinchona, which I mentioned. In the eighteenth century surgery advanced considerably in the hands of Petit, Desault and Heister; the forceps was invented, and many an infant saved. Still obstetrics was murderous. One author boasts of losing "only" 8 out of 10 babies—forceps or no forceps. That is what, alongside with wars, pestilences, famine and ignorance, explains the slow increase of populations up to the nineteenth century.

Internal medicine gained rapidly in England (Mead, Huxham, Fothergill, Pringle) and Germany (Werlhof, Vogel, Zimmermann, Frank).

Altogether the evolution of both theoretical and practical medicine is due to the revolution taking place in scientific minds. Copernicus and Kepler, later Isaac Newton, prepared the medical world for unheard-of changes. Bacon of Verulam and Descartes abrogated the scholastic methods prevailing in all questions bordering on the science of man. Meanwhile Vesal founded anatomy, Harvey physiology, Morgagni pathological anatomy; Haller owned and enriched the sum of medical sciences; Priestly discovered oxygen, and Lavoisier the principles of the process of respiration and the meaning of oxidation; and John Hunter established medical experimentation.

Not long after Paracelsus the microscope was utilized. Kircher proposed the theory of a contagium animatum in 1671; Leeuwenhoek discovered real bacteria in 1675. Clinical observation and therapeutics, in spite of perverted theories, found its apostles in Sydenham, Boerhaave, von Swieten, Peter Frank, and Auenbrugger, who in 1761 taught percussion, Corvisart, who made people believe in it in 1808, and Laennec, who, guided by pathological anatomy, taught auscultation. Meanwhile, Bichat had demonstrated the morbid processes in the tissues in place of regions or organs, and his countrymen, while Germany, in accord with its political depression and indolence, was entirely given over to the obscurantism of what was called nature philosophy, worked their way up into the great facts of pathological anatomy. Undoubtedly the parliamentary spirit of French politics awakened ambition and discussion. When the minds of Central Europe became sufficiently prepared both for an intellectual and a political revolution, Rudolf Virchow took part in both. In the theory and practice of medicine, individual and public, he became the immortal leader.

Through all the previous times, viz., the first half of the nineteenth century, Great Britain had

never deviated from its practical common sense. It contributed very little to the general knowledge, but it never was led astray by the wanton system of Brown, which had to look for proselytes in Germany and America (Benjamin Rush was its prophet), and the names of Travers, Williams, Crawford, Astley Cooper, Charles Bell, Abercrombie, Marshall Hall, Cheyne, Pitcairn, Bright, Carswell, must be mentioned in the very briefest sketch. To say that English medicine was without prejudice, however, would be wrong. The narrow uniformity of opinion, for instance, was such as to force candidates for a degree to swear they would never engage in homeopathy.

About and after the time of the Vienna nihilism nothing was thought of except nursing and diet, defective at that. The action of drugs was not known or appreciated. If diseases had their legitimate type, it was not recognized. About 1860, however, therapeutics became acknowledged as the very aim of medicine, new methods were found, observation and treatment became more local, surgery, ophthalmology, laryngology, enjoyed the aid of new instruments of precision; physical remedies, electricity, warmth and cold became known, and therapeutics grew to be more prominent in the thoughts of the world, both medical and lay. It was then that hydrotherapeutics began its career. For it was the time in which theories had been shaken, the people took more interest in their own welfare, discussions of all sorts were universal, and the political and individual dignity of man was recognized. All that happened though the contest between nations, diffidence, malevolence, jingoism, cruel wars, were still the signature of the times. Only the fight against disease became the same in all countries with the new scientific methods. Evidently equality, fraternity, and solidarity begin in and through science and its application. The process is slow, and the only consolation is that history is long. There is no longer a fratricide in science, there must come an era when there be none among nations.

The modern improvement of therapeutics has resulted from the change of methods. In place of mere empiric observations the new experimental method was applied, as in all biological studies, to that of the effect of drugs, and the cause of disease and its results. Diagnosis began to include etiology, etiology suggested treatment.

A few instances of the extent to which etiology has modified our treatment in modern times are the following: A wonderful change in the practice of modern medicine has been worked by the extermination of teething as an alleged cause of disease. I may be very brief, for I state only what everybody knows, viz., that teething is a physiological process which is not disturbed except by a serious constitutional disorder or a local anomaly in the bone or in the

mouth. All the diseases which were attributed to dentition as a matter of course exist, but have nothing to do with it. Slight indisposition of a nervous disorder requires no interference, but rickets, diarrhea, and convulsions demand a diagnosis and individual treatment. To the same degree, however, that the teeth of infants and children have lost their import as a cause of disorder, those of the adult have gained. Modern dentistry is one of the aids not only of comfort and beauty, but of health and longevity.

There is another subject which is becoming of vast import. Rachitis is old in poor, abject, prince- and war-ridden Europe, but was unknown in America until forty years ago. Immigration carried with it population, labor, wealth, rapid expansion, numerous new States, incentive to scientific efforts, also competition, tenement houses, subterranean dwellings, factories, woman and child labor, poverty, much tuberculosis, and rachitis without end. Before the law of the land will be so improved that the social conditions become humane, the skill of the physician will be demanded with his hygienic and medical treatment. Avoid the artificial infant foods, the use of unmixed cow's milk, prolonged maternal lactation, and bad air. Diagnose rachitis early, when constipation beginning in the second month, softening of the cranial bones, undue perspiration of the occiput, slight beadings of the ribs, laryngismus, cerebral congestion or hydrocephalus suggest the diagnosis. When you diagnose early and treat early you may prevent sudden death, prolonged hydrocephalus, secondary idiocy or imbecility, and lifelong deformities. Air and mixed food, animal broth and cereals, cod-liver oil and phosphorus and bathing—all of them easy to procure, even by the poor—yield a proof of what therapeutics guided by diagnosis can accomplish.

Hereditary syphilis is now known in many of its late and modified results. Everybody knows its symptoms as they appear immediately after birth or in the second month. Everybody knows at present, or should know, that by causing hyperemia on the places of apposition it favors rachitis, but also early hyperostosis with but little deformity; that it increases the size of the head in the first half year of life, but less than rachitis, which continues to have that effect permanently; that by inflammation of the interstitial tissue, the periosteum, or the blood vessels, it may cause hydrocephalus, which may, when recognized, become accessible to treatment; that it interferes with the general development in the shape of what Fournier called metasymphylis to such an extent as to render children of six or eight years, with no apparent illness, puny and sickly. Through knowing all this we find our therapeutics of a great many ailments and imperfections of children vastly improved; the little invalids gain flesh and color and vigor, and permanent health, not with arsenic, or iron, or other roborants, but with mer-

cury. I know of no greater addition to the welfare of society through drugs than this, and no greater reward to the careful diagnostician of a condition which is quite frequent.

Since in our own time a number of insects have been found to be the carriers of both infectious and contagious diseases, the benevolent friends of our animal neighbors have reason for anxiety and lamentation. For malaria is communicated by the musical anopheles mosquito—no courtesy seems to be extended to it, though it is only the female that sings and stings—the filaria disease by *Culex* and *Anopheles*; yellow fever by *Stegomyia fasciata*, the sleeping sickness of Africa by *Glossina palpalis*, the relapsing fever by the vulgar bedbug, whose attractions do not grow by being called *Cimex lectularius*, and the spotted fever of the Rocky Mountains (according to Wilson, Chowning, Anderson) probably by the euphonious *Dermacentor reticulatus*.

Moreover, plague bacilli (Yersin, Nuttall) and those of cholera and of typhoid fever have been found on flies, and lately the transmission of cerebrospinal meningitis has been connected with the action of fleas. That is why it appears that unless mosquitoes, bedbugs, flies and fleas have some means of proving their indispensability to civilized society, their extermination as preventive therapy against fever and ague, yellow fever, relapsing, and typhoid fevers, and the rest of our scourges will not be regretted by the vast majority of mankind.

Long before insects were hunted up in their haunts, bacteriology and physiological chemistry appeared in the field. Their influence on the study of infectious diseases and the organic metabolism I take to be known to all, and shall not consider, for that and other reasons, in the brief time at our disposal. The laboratory has proven an addition to our knowledge, to our practical success in curing and preventing disease, and also to the methods of those who are taught to work with them. That is why I am quite ready to subscribe to what your own Chittenden proclaimed only a year ago, that the laboratory teaches the student to see and to think for himself. That it affords that training which leads to the development of the wise and skilful practitioner of medicine, and shows him how to throw to the winds the writings of others and to believe what he has himself seen. But the student should not forget that the eye sees only through the brain that controls it, that it takes time and long honest effort to train it, that there have been and are other eyes and other brains beside his, and that the wide, wide world of medicine, with its aims and obligations, lies far beyond the walls of a single laboratory, or of all the laboratories, and that all of them must find their center in the clinical ward, at the bedside, in municipal and state sanitation, and all the hygienic and social interests of mankind.

Unfortunately the opportunities for practis-

ing both senses and brains in clinical wards are not numerous in the medical schools of the United States. They will not improve until each school has its own hospital. The State Universities or individual rich men and women can take no better part in the promotion of the welfare of the people than by seeing to it that no young man begins his work among the public at large before he has obtained general experience in a hospital under the eyes of his teachers. Remember the Scotch king of olden time who licensed a doctor only after the applicant could prove a twenty years' practice among his enemies.

The observations at the bedside do not always bear out those made in the laboratory. Clinical experience, when repeated untold times, precedes quite often its reaffirmation by experiments. Therapeutical methods when firmly established are often contradicted—for the time being—by the insufficiency of laboratory methods. Such an instance is in our modern therapeutics the use of alcoholic beverages in septic fevers. Modern laboratory results tell us that the administration of alcohol before a dog, rabbit, guinea-pig, pig, mouse, or chicken is exposed to the action of a narcotic virus, makes it more susceptible; that 5 c.c. of absolute alcohol, when given to an animal of 1 kilo, is a fatal dose. That is true, and what does it prove when this observation is applied to a man of 75 kilos? (S. Meltzer.)

It proves that it is worthless. For that man was never given for therapeutic purposes 375 c.c.—12 ounces—of absolute alcohol so long as the world was created. Besides, it would never be given in one or two doses, would not be introduced into the stomach by a tube, where it would coagulate the albumin of the tissue and cause ulceration, but it is given in dilution, in small and often-repeated doses, and is slowly absorbed. Besides, the infection to which the animal is exposed in the experiment is a sudden one; it is overwhelmed by it, and dies. Man when infected receives a certain amount of infection only; while it multiplies in his circulation it creates an adequate amount of antitoxin, which aids the alcoholic beverage in its antiseptic action.

We are told by some that alcohol increases blood pressure, by others that it does not. We have reason to believe that it is a depressant for the nerve centers, but also that it causes the contraction of a muscle when applied to its motor center, that it slows the heart beats when applied to the periphery of the vagus nerve, and dilates the blood vessels of the submaxillary gland when applied to the chorda tympani. Alcohol also flushes the face by stimulating the vasodilators; and by irritating the tone of the vasomotor center it stimulates normal function in the peripheries. Thus it counteracts the force of an infection which dilates the vast territory of the splanchnic nerve, with the high internal temperature and cold extremities; that is why it

is beneficial in collapse when administered in the bold doses that are indicated. When Meltzer, whom I am glad to follow in his reasonings, founded on physiological experiments and ripe clinical experience, adds to these considerations that 1 c.c. alcohol per kilo given in twenty-four hours furnishes 500 calories to a man weighing 75 pounds, he furnishes an additional proof to the benefits to be derived from alcoholic beverages.

The 375 c.c. of absolute alcohol mentioned before, correspond to a liter of strong whisky, two bottles of port or sherry, or six bottles of hock wine or claret—doses hardly ever given or required. Whisky or brandy is hardly ever given undiluted; because in that condition it would share to a certain extent the methods in which the laboratory workers kill the poor animals and thereby try to convince us that alcohol is as reprehensible as morbid fanatics want us to believe. But practical observation shows us that there is at the present time no antiseptic which can be administered internally of equal value with alcoholic beverages. The worst forms of typhoid infection die without them; the septic forms of diphtheria which are inaccessible to antitoxin may still be reached by whisky or brandy. In this seemingly hopeless condition it may be life-saving. Theoretical objections, ethical opposition, should not count. A child of three or four years may be saved by 100 or 200 cc. of whisky given daily, if by nothing else, and escape the undertaker.

There are many other apparent incongruities between laboratory and therapeutical experiments. Both must be considered of equal value, when repeated a sufficient number of times, in determining the practical value of a method or remedy. It must be understood, however, that in internal medicine we require large numbers of observations, for the human organism is not a test tube in which the external circumstances are always uniform. That is why the observations in operative medicines are, in comparatively small numbers, apt to be more correct than those in which, in internal organs, the blood or the nervous system are to be reached by drugs or by imponderables. To the class of remedies belongs also water in its manifold therapeutical use.

Hydrotherapy is very old. Hippocrates and many after him knew its beneficial effects. It was a power in medicine as it was in the imagination of the people that used water in the fight against demons and disease. A vessel filled with water stood in front of the dwelling that held a corpse, one was thrown after it when it was carried out, the participants took a bath, the body was interred beyond the river; the sick would go into the water like, according to Bartels, the Moquis, when they had fever, to keep away the demons. Modern hydrotherapy, however, has returned to Hippocratic principles. It does not mean cold water alone, hot water alone,

or a single method of its use. The knowledge of its usefulness is not due, as the credulous multitude would have it, to the inspiration of a coarse Silesian peasant; it finds its indications in the teachings of physiology and the rational observation at the sick-bed. The cold which contracts the blood vessels must increase blood pressure, the specific gravity of the blood and the number of erythro- and leucocytes in the capillaries; the warmth which dilates the blood vessels lowers blood pressure. The effect of different temperatures depends to a great extent on the condition of the body at the time of the administration. That is why cold applications in scarlatina or measles are not indicated, but cold affusion in a warm bath or immersion in cold water with subsequent warming; why hot bathing in cerebrospinal meningitis has been advised; why, in 1850, while in charge of a cholera hospital I could employ the hot immersion, afterward recommended by Rumpf, of cholera patients; or why foolhardy patients with myocarditis are occasionally carried out feet forward from a Turkish bath establishment. The Romans knew some thousands of years ago that "when two do the same thing it is not the same thing."

There are other remedies of great value which are waiting for experimental laboratory corroborations of their effects. To that class belong arsenic as a nutrient and nerve, and phosphorus as a tissue builder in subacute and chronic inflammations of the bones and in rachitis.

In approaching the subject of modern means of therapy, let me beg your indulgence for hardly mentioning to-day sero- and organotherapy. The latter finds its best representative in the action of the thyroid gland in different forms of cretinism. Time is short and opportunity fleeting. We all, I think, agree about them, and about the action of antitoxins—those we have now and those that are sure to come—and their preventive influence in diseases and epidemics. We know, for instance, that in the war of 1870 the German army, vaccinated and revaccinated, lost of smallpox 459, and the French 23,000 men. With the growing interest in them, shared by all of us, the scoffing detraction of drugs will make itself heard over and over again. That is why I crave the privilege to say again, as many times before, that I believe in medicines of all kinds, provided their action is understood, and they be given in proper cases, times and doses. Iron in the shape of a pill is as welcome as iron when used as a knife, or a saw, or an artery clamp.

Permit still another word on laboratory work in medicine in general and therapy in particular. Nearly all people agree nowadays on the subject of animal experimentation. Still it is claimed by its enemies that mistakes may be made and have been made, but it is admitted that the most important progress in modern

medicine could not have been made without it. The claim that even medical men like Tait have joined the ranks of what they like to call "anti-vivisectionists" can be substantiated. What of it? Operative dexterity which cleans out a pelvis as neatly as if it had been done by that great and humane medical gentleman, Spencer Wells, does not prove its living or dead possessor to be ethical or a friend of anybody but himself. The knowledge of the action of the roots of spinal nerves, their differentiation into motor and sensitive fibers, the localization of cerebral faculties, of the centers of temperature, respiration, speech, sight and hearing, the functions of the stomach, intestines, and the visceral and ductless glands could not have been accomplished without animal experimentation. A great many remedies—strychnine, curare, tuberculin and antitoxin, immunization and serotherapy could not have been studied without it. The tens of thousands of diphtheria and hydrophobia patients saved, the increased knowledge promising future curative procedures in tuberculosis, pay amply for the lives of rabbits and guinea-pigs sacrificed in behalf of the human race. The employment of anesthetics has made experiments more than ever humane. Experiments on man, always shunned and condemned, have never been condoned by the medical profession; and better informed legislatures will rather spend their time and efforts on the suppression of quackery and fads than of the exertions undertaken in the interests of suffering mankind.

Just think of the preventive measures used for securing asepsis, the care bestowed on the patient, the air of the room, on dressings, on instruments, and particularly on the sterilization of the finest instrument of them all—the human hand. One-third of a century ago when you operated on a strangulated hernia it was discourteous not to invite every bystander to examine the wound. My great teacher in Göttingen, Conrad Langenbeck, a little over half a century ago, was professor both of anatomy and of operative surgery; forty years ago my surgical colleague in the New York Medical College amputated the limb of a corpse and a limb of the living in the same forenoon, on the same table, in the same purple gown. At the present time what therapeutical change! The very literature of hand-cleansing grows daily. Carbolic acid solutions, fat corrosive sublimate, alcohol, soap and water and brush, gloves of twine and of rubber, rival in their attempts at removing the innocent epiphytes of the hand, and the *Staphylococcus albus*, and other still more harmful microbes, and to insure the success of an operation. And still there is the complaint of insufficiency of every method and the attempt at finding one more efficacious.

(To be Continued.)

International Tuberculosis Congress.—The next congress will meet at Washington, D. C., in 1908.

THE GOPHER: A POSSIBLE SUBSTITUTE FOR THE GUINEA-PIG. A PRELIMINARY REPORT.

BY S. W. HEWETSON, M.D.,

OF PINCHER CREEK, ALBERTA, CANADA.

ONE of the greatest handicaps experienced by medical practitioners in the far West is due to the absence of the many laboratory facilities at the ready disposal of their more fortunate Eastern confrères. After having had the privilege of acting for several years as assistant to Dr. E. L. Trudeau, the writer not infrequently in obscure cases feels heavily handicapped, without the many aids in diagnosis available in such an excellent institution as the Saranac Lake Laboratory. For instance, in appropriate cases, he would often highly value a little timely assistance from his old friend, the guinea-pig. Anyone who has had an opportunity of studying the habits of the gopher and the guinea-pig cannot have failed to observe the close resemblance they bear to each other. Except in the winter months gophers are readily obtainable throughout Alberta and the West generally, but hitherto they have done nothing to justify their existence. Dr. Baldwin, of Saranac Lake, very kindly made a thorough review of the literature on tuberculosis, but failed to find any reference to experimental work with gophers. These several reasons led to the following experiment, the object being to determine the susceptibility of the gopher to tuberculosis:

March 14, 1905. Twelve gophers were procured and nine of them were given, subcutaneously, 2 c.c. of a solution containing 0.5 c.c. of tuberculous sputum. This solution, under the microscope, showed from two to five tubercle bacilli in each field. Their rectal temperatures were found to vary from 99.5° to 102.5° F.

March 21, 1905. No. 1 was accidentally killed; post-mortem showed no evidence of disease. April 14, 1905 (twenty-one days after inoculation), No. 2 was killed (chloroform). Examination showed some induration at site of inoculation, slight enlargement of inguinal glands, and, when compared with No. 1, or with guinea-pigs of the same size, decided enlargement of the spleen. The surface of the latter showed a few suspicious grayish areas, scarcely larger than a pin-point, but microscopically no tubercle bacilli were found, except from site of inoculation. At this stage most of the inoculated gophers showed a decided loss of weight.

April 13, 1905 (thirty days after inoculation), No. 3 died. Examination showed great emaciation. Typical tuberculous ulcer at site of inoculation. Distinct enlargement of inguinal glands and spleen, the latter being three times its normal size. Its surface showed numerous miliary tubercles, the largest being the size of a pin's head. The liver was also affected, but the tubercles were smaller and less numerous. Lungs normal. Tubercle bacille were found in spleen, liver and site of inoculation. At this stage four of the inoculated gophers were given tuberculin

subcutaneously in amounts varying from c.c. 001 to c.c. 01. The tuberculin, however, was old, and no definite reaction was obtained. When compared with the first record, all of the inoculated gophers showed at this stage subnormal temperatures. In only one case was the temperature over 99° F., the lowest being 95° F. in No. 4 (dying).

April 14, 1905 (thirty-one days after inoculation), No. 4 died. Examination showed practically the same condition as in No. 3, except that the spleen was somewhat larger. The spleen was examined by Dr. Baldwin, of Saranac Lake, who reports as follows: "It shows undoubted tubercles, and resembles that of the guinea-pig. I see no reason why they (gophers) might not be used instead of guinea-pigs for diagnostic purposes, or experimental work."

April 15, 1905 (thirty-two days after inoculation), No. 5 killed. Less emaciation than in previous cases. The spleen, however, was at least five times its normal size, and the tubercles, both in it and in the liver, were more numerous and distinctly larger. Lungs normal. Tubercle bacilli were also more numerous, as many as five being observed in one field.

April 16, 1905 (thirty-three days after inoculation), Nos. 6, 7 and 10 (the latter a control) were killed. No. 10 was well-nourished and showed no evidence of disease. Examinations of Nos. 6 and 7 revealed conditions similar to those already noticed.

April 24, 1905 (forty-one days after inoculation), No. 8 died. Examination showed advanced tuberculosis. May 9, 1905, No. 9 died. No examination made owing to writer's absence. May 18, 1905, Nos. 11 and 12 (controls) examined. Found to be well-nourished and showed no evidence of disease.

Summary.—This experiment distinctly proves the susceptibility of the gopher to tuberculosis, and places in the hands of medical men residing in the gopher belt an additional aid in the diagnosis of obscure cases, be they renal, pulmonary or glandular. Its use would be limited to cases in which the presence of tubercle bacilli could not be demonstrated with the microscope, owing to their being present in small numbers. To obtain quicker results the injections might be made in larger amounts directly into the peritoneal cavity. If this were done, however, a certain percentage of the test animals would probably die from acute septic conditions; the mortality from this cause depending on the virulence of the associated infection. It is to be hoped that further experiments will show that the gopher possesses the same happy susceptibility to other diseases as he displays toward tuberculosis.

British Medical Association.—The next annual meeting of this association will be held in Toronto, Canada, beginning August 21, 1906.

MAMMARY SYPHILIS WITH INVOLVEMENT OF THE AXILLARY AND SUPRACLAVICULAR GLANDS SIMULATING CANCER OF THE BREAST.

BY EDWIN BEER, M.D.,

OF NEW YORK;

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THE following case is reported, as it presents a very unusual and interesting condition. The patient, a married woman thirty-five years of age, had noticed about four months prior to my examination a mass in her left axilla; a few weeks later she noticed a similar mass in the upper half of the left breast. Whether the masses appeared in the order given, she is not sure. The tumors worried her, though they caused no inconvenience or pain. She consulted five or six physicians in her home in the South, and an operation was advised based on the diagnosis of cancer of the breast. Considerably worried by the prognosis and diagnosis of the local physicians, she came to New York to another physician, who brought the case to me.

The patient was a middle-aged, rather thin woman. She was anemic in appearance and nervous. Her general condition suggested nothing cachectic. She was perfectly well but for the tumors above referred to and complained of these alone.

I found in the upper half of her left breast, imbedded in the glandular tissue, a non-tender mass measuring 2 x 3 inches. It was freely movable on the deeper parts and non-attached to the skin. Its borders were indistinct, its surface smooth, and its consistency moderately soft but not fluctuating. The nipple was normal. In the region directly below the middle of the left clavicle there was a similar mass apparently lying below the pectoralis major muscle and pushing this forward. This mass was about half the size of the tumor in the breast. Its borders were more distinct, and it felt rather spherical. In the left axilla there was another soft mass, almost the size of a hen's egg. It was freely movable and non-tender. In the same axilla there were a number of other enlarged glands. All of these were of the consistency of inflammatory glands. In the left supraclavicular region another similar mass fully as large as a hen's egg and several small glands of the consistency of chronically inflamed glands were to be felt. The large mass in the supraclavicular region corresponded in all its characteristics to that in the axilla. In the right axilla and right supraclavicular region there were a number of enlarged lymph-nodes of normal consistency. On both sides of the neck the posterior cervical lymph-node chains were enlarged and distinctly palpable. Otherwise the patient showed nothing.

At first blush such a case would impress one as cancer of the breast, but that impression could not last. If it was a cancer with axillary and supraclavicular glandular involvement it was a

decidedly unusual manifestation of that disease. The consistency of the tumor in the breast and the consistency of the involved glands was softer than that of cancer cases. Large masses in the axilla and the supraclavicular regions are also most unusual and uncommon in cases of carcinoma of the breast, where the glands usually remain small and feel hard and very firm. These peculiarities, together with the presence of the enlarged posterior cervical lymph-nodes, made me doubt the diagnosis of cancer and suggested the working diagnosis of mammary syphilis with glandular involvement.

To confirm my diagnosis, I took the husband of the patient aside, but he gave me no information. Meanwhile the patient's physician found out the following few but suggestive facts from the patient herself.

The patient had been married twice; sixteen years ago and again this year. Her first husband had been ailing for years and had infected his wife with some venereal disease for which she was treated. The physician who treated her then told her that her husband had infected her. She became pregnant, and at this time developed a rash which appeared on her upper extremities. "Lumps" appeared on her head and ulcers on her vulva. The child was born in the sixth month. After this the patient separated from this husband and has been troubled ever since with sore throat, pains in back, knees and shins.

This meager history helped to confirm the view of the case expressed above, and the patient was put on mercury hypodermically and iodides internally in increasing very large doses. This treatment was carefully followed for one month, when I examined the patient for the second time. The following were the local physical findings: The breast was normal. The tumor in the upper half was absolutely gone. The large masses in the axilla and in the supraclavicular region were gone. The mass that lay beneath the pectoralis major muscle was still palpable, though much smaller. The lymph-nodes were smaller in the different regions above mentioned. The patient had gained in health. She felt stronger and had become heavier. The old pains in her knees, shins and spine had disappeared completely.

The same treatment was kept up another month, when I examined the patient again. Her general condition had improved still more. Locally the tumors had disappeared completely. In the position of the mass below the clavicle under the pectoralis major muscle there was the slightest induration. That tumor had disappeared and left a little thickening in the tissues. All the posterior cervical glands had disappeared. There were still a few glands in the opposite axilla.

In this most unusual case the specific treatment verified the diagnosis suggested at the first examination. It is needless to compare this case with the other cases of mammary syphilis in the

literature. Suffice it to say that there are less than 50 reported cases of syphilis in this location, and almost all of these cases failed to simulate carcinoma with axillary and supraclavicular glandular involvement, as did the one just reported.

116 West Fifty-eighth Street.

THE DIAGNOSIS AND TREATMENT OF ANEMIA.¹

BY HARLOW BROOKS, M.D.,

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(Continued from Page 778.)

Chlorosis.—I know of no other condition in which an impartial survey of all the clinical and laboratory evidence is more important than in the diagnosis of chlorosis. There is nothing, not even the sex or period of life, associated with this anemia which can be looked upon as characteristic of chlorosis; the blood conditions are neither well marked or clear cut; we must not therefore depend on a single symptom or collection of symptoms, but on the entire picture, and, perhaps more important than anything else, on the exclusion of all other conditions.

Among the most important diagnostic signs are the age and sex of the patient, for, though we admit the possibility of chlorosis existing in the male, we know that it is rare in men and that it commonly develops in girls at about the time of puberty, although it may recur—in fact often does—in after-life. As a rule, also with many exceptions, it is seen in its typical form in girls whose sexual development is deficient. The general picture of the chlorotic girl is too familiar to all of you to merit a special description.

The blood findings in chlorosis are extremely simple; as a rule the number of red corpuscles is relatively normal, and the chief abnormality, in fact the one which characterizes the disease, is the reduction of hemoglobin. This may fall to less than 20 per cent., and yet the number of red cells remain practically normal. Nucleated red cells, normoblasts and, rarely, megaloblasts are seen, also many malformed and degenerated red cells are invariably present. The leucocytes as a rule remain normal.

Chlorosis is very apt to be seen mixed with secondary or symptomatic anemias, which complicate the picture, and often the clinician fails in treatment where an early and easy recovery is contemplated. Where chlorosis resists intelligent iron medication, the clinician should seriously question as to the possibility of complicating secondary anemias, although I admit, of course, that occasional cases of chlorosis are very difficult to cure. In my personal experience, and it has been my fortune to see a large number of cases of wealthy young girls in the practice of a well-known gynecologist, I must say that pure and uncomplicated cases of

¹ Read before the Erie County Medical Society, June 6, 1905.

chlorosis are rare in this class, much more so than is generally thought. Hospital practice, where the hygienic conditions in which the young women are brought up are altogether bad, leads me to the same conclusion that primary and uncomplicated cases of chlorosis are relatively rare in any plane of society, and that careful study of these cases will disclose other and often unsuspected conditions which complicate and account in large part for the difficulty found in treating to a successful issue a good many of these cases. I know of no one blood condition which yields better or more certain results to treatment than uncomplicated chlorosis, but when associated with symptomatic anemias they are often very unsatisfactory.

Secondary Anemias.—The simplest form of secondary anemia is found to follow hemorrhage, particularly acute hemorrhage. As a rule in these conditions, the history of the case or the presence of some external sign of bleeding, either the open wound, the throwing out of clots from the various orifices or the presence of blood-stained vomitus, tar-colored stools and the like make diagnosis easy. There are, however, other cases in which the hemorrhage may take place into the closed cavities, as the hemorrhage into the peritoneal cavity from a duodenal ulcer, from early ruptured tubal pregnancy, and occasionally from unsuspected rupture of the spleen or liver; in these cases a careful study may be necessary for a correct understanding.

As a rule the diagnostic signs of an acute hemorrhage are well recognized—the pallor of the skin and mucosæ, cold and clammy extremities, associated with profuse cold sweats, slight to severe dyspnea and rapid, irregular, soft and thready pulse. The heart action is rapid, irregular, and the sounds may become loud and almost metallic while variable hemic murmurs develop. The urine often increases rapidly in abundance; the condition soon passes into one of complete shock. Symptoms due to cerebral anemia develop, nausea, flashes before the eyes, ringing in the ears, and occasionally loss of consciousness and mild delirium; with these symptoms we must take into account the psychic disturbances which often appear in susceptible subjects at the sight of even small amounts of blood or with the idea that bleeding is taking place or death imminent.

The alterations in the blood, as shown on examination, are usually unnecessary for diagnosis; briefly, they are rapid decrease in the number of red cells, with proportionate loss in hemoglobin, the latter becoming most evident some days after the hemorrhage. The watery portions of the blood are increased, sometimes with more or less swelling and maceration of the corpuscles; absolute increase in the polynuclear leucocytes follows. As a general thing the rapidity of clot formation is augmented. The fluids of the blood are quickly replaced after the loss of blood has been checked, and in

reconstruction nucleated red corpuscles appear in the blood in large numbers.

In simple chronic anemia as results from chronic hemorrhage, from renal disease and numerous other conditions which produce this extremely frequent condition, all grades of severity may be seen. It is often surprising, the very slight amount of symptoms or blood lesions which develop after considerable chronic losses of blood, as from epistaxis or menstruation. On the other hand, even slight losses, as from oozing mucous surface, may produce marked anemic conditions.

The signs and symptoms of simple secondary or symptomatic anemia may vary from a slight yellowish pallor, possibly with slight dyspnea on exertion, to so severe a degree as to resemble the terminal stages of pernicious anemia. There is nothing in the physical appearance of these cases, and nothing in their symptoms which permits you to differentiate from pernicious anemia except the absence of any adequate explanatory cause in the last-mentioned disease, whereas, in the former, some cause is to be found if your study is sufficiently extended. It is to these cases of anemia that I wish particularly to call your attention. First, it is well for us to acknowledge that the various stages or grades of this anemia may be caused by almost any factors productive of secondary or symptomatic anemia, and that the alterations in the blood are not of different kinds, but rather variations in degree; we shall find, however, that in a few forms certain conditions are found in the blood which are indicative of the cause.

In general, the red corpuscles in these types of anemia incline more to under size; microcytes are abundantly present in the severer grades, while macrocytes, which we found more frequent in pernicious anemia, are usually in relatively less number. Poikilocytosis in all its stages, from slight distortion of the cells to the most extreme deformity, is more or less marked in all cases. Alterations in the staining reaction of the red cells, due probably to chemical changes in the hemoglobin, are very commonly found, in the more marked instances amounting to polychromatophilia, but in the lesser degrees shown only by a less intense reaction to the dyes for which hemoglobin has an affinity. In the typical case of secondary or symptomatic anemia the hemoglobin index is reduced, while in the pernicious form it is increased; this would be a most important diagnostic sign were it not that in nearly all grave cases of secondary and symptomatic anemia the same high color index is presented by many of the cells, particularly by the microcytes and poikilocytes. Alterations in the hemoglobin, mostly in long-standing cases, may result in a formation in the cytoplasm of the red cells of dark brown, almost black, basophilic granules; these occur with particular frequency in the cachectic diseases.

The leucocytes in symptomatic cases occa-

sionally indicate the nature of the cause, as will be discussed later in the paper, but in a considerable number of anemias of this type there is both a relative and absolute increase in the number of the polynuclear neutrophilic leucocytes.

As will be inferred, the number of the red cells and the percentage of hemoglobin varies enormously, taken together, but neither separately in the more grave cases, they are a measure of the gravity of the case. The occurrence of large numbers of normoblasts in secondary anemia, when they have been few or absent before, I am inclined to look upon as a favorable prognostic sign. Megaloblasts are found only in the severe cases, and their occurrence here is often disputed by purely laboratory men who have little touch with clinical medicine.

In the more severe cases albuminuria develops, just as in the primary anemias, probably as a result of alterations in the albumins of the blood and perhaps from its hydremic condition.

Though the diagnosis can be usually made from the clinical picture only, yet its differentiation from pernicious anemia or chlorosis is by no means simple, and often demands the most careful blood examinations; as a rule, however, by all odds, the most important part of the examination is the determination of the hemoglobin content. As has already been stated, there are certain conditions with which, owing to local vasomotor states, the skin may appear pale and yet the patient be in entirely normal condition in so far as the blood is concerned; these cases are at once excluded by the hemoglobinometer.

It is customary to classify the secondary anemias as to their causation, and since certain essential points are brought out in the discussion of this classification, we shall briefly so consider a few of them.

Those occurring after hemorrhage differ in severity according to the amount of blood lost, according to the previous condition of the blood and the general body tissues, and more particularly as to the number of hemorrhages and the relative time of their occurrence; for example, several successive hemorrhages occurring at intervals are apt to cause a more grave condition than a single profuse hemorrhage in which perhaps the same amount of blood may have been lost. This is doubtless due to the exhaustion which a prolonged demand on the blood-forming organs induces. The hemorrhage may take place from any cause, as from perforation of an ulcer, from the necrosis of a new growth, or perhaps from one of the hemorrhagic diseases; the result in any case is the same in so far as the blood is concerned.

It is well recognized that unhygienic conditions cause secondary anemia, in just what manner we are unable to explain, for experimentation in depriving animals of proper light, air and food affects as a rule but little change. In man, however, where all these deficiencies are more or less associated, it seems very probable

and almost certain that this combination is a causative factor. Prison anemia is an example.

Voit has shown that anemia quickly develops in cases where the albumin of the food is deficient, and v. Hösslein has further demonstrated that anemia follows only when the iron containing albumins are absent. In this relation it is known to be a fact that deficient absorption of these food principles is often at fault, as in various types of digestive disturbances, and not only does the patient suffer from defective absorption in these cases, but intestinal or gastric fermentation also undoubtedly acts in the production of certain toxins which enter the circulation and so tend directly to the augmentation of the anemia. This is very well illustrated in chronic constipation, colitis, chronic gastritis, enteritis and many similar states.

Other examples of toxic production of anemia are very numerous. Autotoxins from defective action of the ductless glands, as in Addison's disease and myxedema, also from deficient renal activity, are undeniably frequent, and those from bacterial toxins, from alcohol, nicotine or from the more common metallic poisons as lead, mercury and arsenic, are all well recognized. In most of these instances the anemia is probably more or less the result of hemolysis directly resulting from the action of the poison on the blood. In some of these toxemias the blood very frequently shows a polychromatophilic degeneration of the red cells, which is particularly marked in most cases of lead poisoning. The occurrence of this change in the red cells is more or less diagnostic of the toxic anemias, although also seen in the severe grades of primary and some other secondary or symptomatic anemias.

In chronic tuberculosis, in syphilis and other chronic specific diseases the anemia is also probably caused directly by hemolysis. In certain of these conditions, as in tuberculosis and typhoid, the character of the process may be suspected by a study of the relative percentages of the leucocytes, and in suppurative processes the nature of the causative conditions may be indicated by the presence of a polynuclear leucocytosis and occasionally by the detection of iodo-phylic leucocytes.

Helminthiasis is so frequent a cause of secondary or symptomatic anemia that no case should be considered without bearing this possibility in mind. Practically any of the intestinal parasites may cause anemia; this is particularly true of the hookworm and the *Bothriocephalus*, although the tinea, the round worms and even the *Oxyurus* may cause not only serious but actually fatal anemias. The action of these organisms is probably threefold, in some cases at least. Thus acting as an intestinal irritant, they prevent proper absorption of the ferruginous albumins; in some cases, particularly in hookworm infection, they often cause large and protracted intestinal hemorrhage, but probably their most important action is in the formation of an ex-

ceedingly active toxin which causes blood destruction. Happily, in most of these cases a clue to the cause is shown by a relative increase in the eosinophilic leucocytes; this blood finding is usually present in all these infections. Parasitic infection should always be suspected in cases of secondary anemia, and the feces should invariably be examined for ova and discharged parasites. The anemia and eosinophilia of helminthiasis is not characteristic of intestinal parasitic infections only, but also develops in echinococcus invasions and particularly during the encysting stage in trichinosis, also to a lesser and more inconstant degree in malaria and other general or local parasitic diseases of animal origin.

In malaria, filarial diseases and other parasitic conditions where the organism immediately enters the blood stream, attacking the red blood corpuscles; the cause and manner of production of the anemia by direct destruction of the erythrocytes is very apparent.

In severe forms of parasitic anemia the blood picture is often practically identical with that of pernicious anemia, and nothing save a careful examination of the feces, particularly after the administration of anthelmintics, will differentiate these two conditions. So common is this error of diagnosis that some authorities assert that pernicious anemia is a result of intestinal parasitic infection. Certainly a considerable number of cases reported as progressive pernicious anemias are in truth secondary anemias due to intestinal parasites.

The anemias occurring with neoplasms should receive special consideration, on account both of their often serious nature and their importance as a diagnostic sign. Thus it has been certainly shown that innocent growths, no matter of what extent, rarely produce anemia, whereas the malignant growths, even those well localized and of small size, almost always do. When iron administration serves to produce early and marked improvement in the anemia associated with new growth, we may feel fairly well satisfied that the growth is either innocent or of a very low grade of malignancy. In this regard we, however, recall that innocent growths associated with hemorrhage, as from submucous uterine fibroids or nasal polypi, do cause anemia. The malignant tumors undoubtedly produce the anemia, not so much through their abnormal demands on the nutritive principles of the blood, but mostly or wholly through the formation of some indefinite toxin, acting very much as those similar factors concerned in the other forms of cachectic anemia. In the anemia of the new growths the blood picture is very apt to resemble that in the other severe symptomatic anemias or in a primary pernicious anemia; thus showing a high color index with a small red cell count associated with the occurrence of macrocytes, microcytes, many poikilocytes and both normoblasts and sometimes megaloblasts. This seems to be

particularly the case with gastric and intestinal tumors.

In the treatment of the anemias there are certain general hygienic principles which seem to apply with about equal force in all forms. Two of the most important of these are air and sunlight. In mild cases, walking, driving or riding in the open air are among the very most satisfactory means with which to combat the disease. When the condition of the patient is too serious to permit of this, as in the anemias of convalescence, after serious hemorrhage or in the severe grades of primary or symptomatic anemia, the patient may be provided with sufficient bed-clothing according to the weather, the windows opened wide and the bed so placed that the rays of the sun fall upon the patient; the eyes may be protected from the glare by properly arranged drapery suspended from the head of the bed or by lashing a parasol to the bedstead. Where circumstances permit, the bed can be profitably placed on a piazza or in the direct open. Many of the more modern hospitals now provide roof gardens, entirely uncovered during clear weather, where the patients may remain throughout the day. Private houses are also taking advantage of the same idea, and in the dusty cities there is no playground, winter or summer, for anemic and delicate and children, more satisfactory than a properly arranged roof garden, as has been recently described by Northrup. These measures appear particularly efficient after septic processes also in cachectic conditions, and recovery without other medication, except generous supplies of proper food, is often marvelous. Patients in tent wards often improve rapidly, and the value of tent life is by no means limited to tuberculous diseases.

The same scheme can be well applied on boats. I know of no more satisfactory treatment of the marantic anemias and malnutrition, particularly in infants. In the babies' floating hospitals, conducted during the summer season in New York, the children are exposed on open decks, some under awnings, some without, some in cribs and others allowed to run about the deck. The results achieved even after but two or three days of this treatment are almost marvelous, and marasmic, putty-colored infants taken from the narrow, sweltering streets of the tenement districts of New York after a few days become translated into healthy, lusty children.

These methods also often act with wonderful success in pernicious anemia. But recently I sent a patient suffering with advanced pernicious anemia, with but 40 per cent. of hemoglobin and a red cell count of less than 1,000,000, for a month's stay at Atlantic City. All the pleasant days were spent in a rolling chair. She returned with 15 per cent. increase in hemoglobin and our prognosis has been changed from bad to good.

With anemic children I have advised, during the warm months, almost no clothing, and a

wild life in the sunshine, air and warm rains. In chlorosis and the simple secondary anemias this treatment alone is almost specific, and even in the more serious cases it is very satisfactory and at least a most efficient adjuvant to other treatment.

Patients to whom this treatment is recommended often inquire as to the relative value of the sea or seaside or the mountains. In my experience in this matter the best results are obtained when the place most attractive to the patient is selected. Just at present I have a mother off at sea while, her daughter, suffering from practically the same type of anemia, is in the mountains. From previous experience with this family I expect equally good results in both, whereas, were the locations reversed, but little benefit would result to either. The mental attitude of the patient is never to be disregarded in this particular, for mental rest, enjoyment if you please, is a part and a very essential one of the cure.

Exercise can be very conveniently combined with this hygienic treatment, but it must be carefully supervised. In bed-ridden cases massage and passive movements are to be used, but with ambulatory patients out-of-door exercise is to be recommended, it being adapted in each case to the special needs of the particular patient. We must, however, constantly bear in mind the condition of the heart muscle in the grave anemias, and we must guard particularly against either mental or physical overstrain. Walking, driving and, where prudent, horseback riding are very satisfactory, but violent exercise such as swimming, rowing, mountain climbing, tennis and the like are to be restricted. As a rule, I do not approve of sports in which excitement plays an important part, though a certain amount of mental exhilaration often facilitates recovery.

Certain cases, on the contrary, demand almost absolute rest and quiet, particularly where the renal or cardiac complications appear. These cases should be placed in a quiet room, kept constantly in bed and placed under the routine of the rest cure, particular attention being directed to the diet. Rest cure, however, frequently causes the building up of abnormal quantities of fat without commensurate benefit in the condition of the blood; except in a very limited number of cases in which serious complicating lesions are present, I do not think much of this treatment.

Change of habitat and climate is desirable in a good many cases. As a rule, patients do best in temperate or cold climates. Occasionally a trip to Newfoundland, the Labrador coast, to the Canadian Northwest or Alaska is most beneficial; others require a more mild or even a hot climate, such as Asheville, Arizona, California, Honolulu or the West Indies. All things being equal, high—that is, very high—altitudes are to be avoided, largely on account of the condition of the heart and blood vessels, but if reached

slowly and under careful supervision, the change may result in very decided benefit. As is well known, the number of red cells goes up rapidly with increase in altitude, and in some cases this increase is permanent even on return to the usual levels. As a general rule, anemics from a low altitude do best in higher, and those from the higher levels are most apt to improve best under an increased atmospheric pressure.

The prevalence of anemia in gastro-intestinal disorders and of gastro-intestinal disorders in anemia needs no mention to you, and, next to the importance of hygienic measures, I believe that no one routine treatment yields such brilliant results as careful study and treatment directed to the gastro-intestinal tract. So frequently are diseases of this tract the primary cause or chief complication of anemic conditions of all grades that many clinicians make a routine preliminary use of purgatives and thoroughly cleanse the intestinal tube before instituting any other methods of treatment. Undoubtedly one of the most important results attained from the use of purgatives is the dislodgment of possible intestinal parasites, and it is well to examine carefully the movements following purgation for parasites or their ova. Where the general condition of the patient permits, I thoroughly commend this treatment, and the purgative may be logically followed by an anthelmintic, say thymol, male fern or santonin. It is of course quite unnecessary for me to emphasize the importance of careful attention to the bowel throughout the course of the disease, particularly in habitually constipated women, and the importance of this matter should be made clear to the ambulatory patient, who often has very inadequate and negligent ideas as to proper intestinal hygiene.

The frequent occurrence of gastric atrophy or dilatation in anemic disorders is well recognized, and gastric lavage and like local measures are often necessary. Predigested foods may be required with special intestinal medication. In this respect I wish to call your especial attention to the value of dilute hydrochloric acid or of nitro-muriatic acid in the treatment of pernicious anemia. A considerable list of cases resulting in apparent recovery, or at least in marked improvement, has been reported recently. The use of these simple drugs, combined in certain dispensary cases in my knowledge, with but little in the way of proper food or hygiene, has met with very excellent results. Salol, beta naphthol, bismuth subnitrate and other similar agents designed to limit or prevent abnormal fermentation are used with benefit. I think there can be but little doubt that the checking of abnormal fermentation limits at least the production of excessive amounts of hydrogen sulphide gas and the transformation of certain amounts of the iron of the food into insoluble sulphide of iron. The occasional exhibition of the saline aperients seems to work to the same purpose and to favor the absorption either of the iron of the food or

that in the medicines given. I also believe that in cases of atrophy of the gastric or intestinal mucosa, such as is commonly found in pernicious anemia, the use of various digestants is indicated.

In all cases of anemia, great attention should be paid to the diet. In this regard we must of course primarily consider the general condition of the patient; thus a diet high in albumins can hardly be recommended in a case of nephritic anemia or in that following acute articular rheumatism or gout. The choice of a diet must rest largely on the individual case then, and on the state of the digestive organs, but particularly bearing in mind, as Voit and v. Hösslein have shown, that the foods rich in albuminoid iron are chiefly beneficial. Among these are the meats, particularly the red meats, with good beef in the form of steak or roast leading; broths, soups and other preparations are to be utilized as indicated. Certain foods will be mentioned under the heading of iron medication, but as very important among the albuminoid foods I wish especially to mention eggs, preferably taken raw, or less desirably, coddled or soft boiled. From six to ten eggs per day may be taken by the average patient without disturbance, and for many of those who refuse to take food in the usual way, raw eggs, which can be quickly disposed of and occupy but little bulk while of very high ferruginous nutritive value, are an excellent and easily digested substitute.

Among the vegetables, spinach, beans, peas and asparagus are perhaps the most valuable. Fruits are to be used in abundance, particularly the acid fruits, such as oranges and apples, also strawberries, though their action is undoubtedly partly to correct any constipating effect of many of the medicaments which we employ; they also contain a certain amount of absorbable iron.

One food which I have used with excellent effect is bone marrow, prepared in the Indian style by simply baking a marrow bone. It is not only a very beneficial article of diet in these cases but is most palatable; it may also be given in the form of timbales in soup.

Blood, either fresh and still fluid or dried, is recommended by some. I have had no experience in its use, since as soon as the patients found what they were taking they refused to continue it. German authorities speak highly of blood soups, and even of blood sausage. Theoretically their use seems sustained.

Though milk is very highly recommended by many, notably by Stengel, I cannot speak flatteringly of it as an exclusive diet; combined with other foods it is valuable, and its tendency to produce constipation may be beneficially obviated by the addition of cream. Whole wheat bread, corn and rye bread, toast and zwieback are useful. In so far as possible considerable variation in diet should be prescribed and the food presented in as attractive a form as possible. It is of course unnecessary to say that all foods

should be well prepared and simple; highly spiced or mixed courses are to be in general avoided. Food should be taken at regular intervals and should always be slowly and thoroughly masticated.

The strictly medical treatment of the anemias is in certain cases most satisfactory, and in other instances most disappointing. In my opinion, this depends more on the case and the causes back of it than on the precise medicament employed. Thus the treatment of acute secondary anemias, as occurring after hemorrhage or the treatment of uncomplicated chlorosis, is easy, and results are quickly attained, whereas the treatment of pernicious anemia is usually unsatisfactory, even under the most favorable circumstances; certain of the symptomatic anemias are almost equally resistant, particularly when the causative factor cannot be directly attacked and eliminated. Before considering the subject of the medicinal treatment further, I wish to say that I thoroughly disbelieve that any specific results reached by any treatment in any one case signify that the same or even similar measures will succeed in another like instance. In the treatment, as in diagnosis, each individual case must be considered on its own merits and handled accordingly.

Iron in one form or another has long been recognized as the leading drug in anemia; as you are all aware, the method of action of iron in anemia is still in question, but none of us can deny its utility in the average case. It is out of place for us to discuss the theories of iron absorption to-night, as the subject would require a book in itself; I shall consequently consider it purely from the empirical standpoint.

In the simple acute secondary anemias and in chlorosis the kind of iron employed apparently makes but little difference. I agree with Hare that, as a rule, the inorganic preparations give best results, and of these I personally prefer the tincture of the chloride, or the carbonate or sulphate, freshly prepared or in the form of Blaud's pill. I have used also the reduced iron, the oxide, and even metallic iron with nearly as good results; in fact, in these instances, the hygienic measures with iron in practically any form are equally beneficial. In other words, it appears to be the case which determines early cure rather than the form of iron. In the symptomatic anemias, results with iron alone are very uncertain, depending mostly on the general conditions back of the anemia; here one preparation of iron may often be without effect while other forms may act well. Iron therapeutics in these cases must be largely experimental. Under all circumstances the bowels must be kept open and attention to general hygiene considered. The use of chalybeate waters is highly commended by some, but I have always seriously questioned if their action was not more due to the water in itself and to the general conditions in which it is ordinarily

taken. Iron can often be well combined with other drugs designed for corrective adjuvant effect, or to facilitate absorption; thus I have often used capsules with a combination of oleoresin of capsicum with perhaps aloes and arsenious acid, strychnine or nux vomica. I have also found the old three chlorides mixture very beneficial used in many cases, particularly where gastric atony is present. Combinations with manganese appear occasionally to act well, though the theories on which the exhibition is based do not appear to be well grounded.

In my experience the organic preparations of iron have been far less satisfactory as a rule than the inorganic forms. I have from time to time employed most of them, and in occasional instances I have met with results where my usual inorganic preparations have failed. As I have already intimated, I have obtained much better effect with organic preparations in the form of eggs, bone marrow and other food substances rich in iron than in the use of the newer preparations themselves; although please do not understand me to discredit them. Many of them are of undoubted benefit and reach a certain class of cases in which inorganic iron is apparently without effect. In regard to bone marrow, I fully agree with Stengel, who has met with little effect from the employment of the glycerin extract or of other artificial preparations; in but one case have I met with success with this preparation, but as a food I rely greatly upon it.

I cannot speak from personal experience as to the value of iron introduced hypodermically, but on theoretical grounds I doubt its utility unless used in the form of blood injections, which I believe are now generally discredited.

In concluding our very brief discussion of the use of iron in anemia, for the subject is too familiar to you all to justify the use of more time, I do wish to say that in so far as my personal experience goes, little or no effect follows its exhibition alone in any of its forms, excepting as a food, in pernicious or the more severe grades of chronic symptomatic anemia. I have also been much discouraged with this drug alone in chronic and complicated cases of chlorosis.

Mercury is often employed very successfully; I have used it mostly as the bichloride in the three chlorides mixture, but it is equally efficient employed in small doses in selected cases as the bichloride in pill form. I have usually used it in very small doses except in syphilitic anemia, but its use is by no means limited to syphilitic anemia. I have, however, never employed it hypodermically except in syphilis, but its use in this manner is highly regarded by some therapeutists.

After iron, undoubtedly our most valuable drug used in anemia is arsenic. Unlike iron, this drug does appear to affect the primary anemias and many of those other states dependent on disease of the blood-forming organs.

It is ordinarily employed as Fowler's solution, though I have also received good results with arsenious acid. As a rule, I think that in serious cases the drug should be given in fairly large and increasing doses until the physiological effect is reached, though in some cases the smaller doses undoubtedly act best. It is commonly admitted that a varied increasing or decreasing dose acts, as a rule, better than a constant dose long continued. Arsenic can be very satisfactorily combined with many other drugs, as with iron, this combination being particularly efficient in chronic chlorosis, or with mercury, strychnine, quinine or other indicated substances. I have never used the drug hypodermically as recommended by Ziemsen and others, who hope by this means to avoid the gastro-intestinal irritation and at the same time to secure earlier results, and I have thus far seen no results following its administration as cacodylic acid or its salts, though the number of cases in which I have seen it so used is very small.

It is of course self-evident that drugs are to be used as indicated in the symptomatic treatment. Thus quinine is to be used in the malarial cases; hydrochloric acid, pepsin, capsicum, and other drugs where intestinal or digestive disorders are present. As I have already stated, symptomatic treatment occasionally meets with most flattering results in the exhibition of hydrochloric acid in pernicious anemia.

I have seen no benefit follow the inhalation of oxygen in any stage or form of anemia, though, as you know, it is often employed for this purpose. Neither have I as yet practised transfusion of blood. Theoretically, the ground on which this method is based is so insecure that I have never thought it worth while taking the risk. It has always seemed to me that the same effect, without the attendant danger, is gained by saline infusions, which often act with marvelous effect, particularly where the volume of the blood is deficient. The effect so gained is often but temporary, but in some instances it appears to be permanent and it at least tides over what might be fatal crises in some cases; it is particularly beneficial after severe hemorrhage or wherever increase in the volume of the blood is desirable. It has acted very well with me in the terminal stages of diabetes mellitus and also in nephritic anemia.

Conclusions.—The chief points which I have attempted to emphasize in this paper may be summarized as follows:

1. The most important step in the study and treatment of resistant anemia is first a thorough and complete examination of each case in its every aspect.

2. The technical difficulties of such an examination are not great, and the results more than repay the time required.

3. Both clinical and laboratory methods must be used and the united evidence impartially considered.

4. The treatment of anemia must be based first on a thorough study of the particular case in hand.

5. Greater results are to be expected by the employment of carefully considered hygienic methods than from the use of drugs alone.

6. Little or nothing of value has been recently added to the purely medical treatment of the anemias.

GASTRIC DILATATION.

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THE clinical picture of dilatation of the stomach was recognized more than a century ago; long before Kussmaul was able by means of his stomach pump to treat this disease, at that time considered incurable. His epoch-making publication regarding the subject appeared in 1869.

Considering the crude diagnostic methods prevalent at the close of the eighteenth, and beginning of the nineteenth century, it is not surprising that physicians were able to detect only the most advanced stage of the lesion. These were cases in which the stomach lay a hand's breadth below the umbilicus, or at times reached even to the symphysis pubis; and where the patients persistently vomited large amounts of stagnant food masses. The early stages of the process, which led to the dilatation, remained unknown; the autopsies then showed a stenosis of the pyloric end of the stomach as the cause of the trouble.

Thus it came about that the condition was termed, not according to its real anatomical origin, the "Pyloric stenosis," but was named from its most striking symptom, the "Dilatatio ventriculi."

This name is no longer appropriate now that we can recognize the disease before it has led to a dilatation of the stomach; in accordance with the nomenclature of Virchow it is better to say pyloric stenosis, with or without secondary dilatation; just as in the case of a cardiac valve lesion where we do not speak of a dilatation of the right heart, but designate the condition as a mitral regurgitation with consecutive dilatation and hypertrophy of the right ventricle. The gastric dilatation, therefore, presupposes a lesion of the pylorus.

There are still a number of authors who do not admit this dilatation as arising in every case from a stenosis; but claim that gastric dilatation may occur without pyloric stenosis, due merely to a muscular weakness, that is, the so-called "ectasie ex atonie." Among these exponents are, for instance, Stiller in Budapest, Ewald, Pariser, and to a certain extent, Rosenheim and Boas. On the other side are Schreiber, Ullmann, and particularly, Cohnheim. These men deny the possibility of the development of a chronic dilatation from a primary weakness of the gastric musculature without anatomical obstruction, or at most, only admit an acute dilatation follow-

ing a paralysis such as occurs in shock or after laparotomy. According to some authors, we still have two forms, namely, "Ectasie ex stenosi and ectasie ex atonie."

The origin and development of the stenotic form is well known, so that we can be very brief on this point. The most common cause is the ulcer pylori which has developed into a scar, hence the cicatricial pylorus stenosis; next come the tumors of the pylorus, benign and malignant; then perigastritis with formation of adhesions and bands between pylorus and the neighboring organs, such as liver, pancreas, gall-bladder, etc. Besides these, but less often, there is a compression of the pyloric end of the stomach by enlarged adjacent organs, giving dilatation. The same result is obtained by ulcer cicatrices, tumors and compression of the duodenum. Finally, a dilatation can arise from a spastic stenosis in the case of an active, not yet cicatrized pyloric ulcer, just as it may also occur in kinking of the stomach in gastropotosis; it may occur also in gastritis gravis where the pyloric sphincter is hypertrophied. The stenosis following scars, neoplasms, adhesions or compression cannot be relieved by internal measures; whereas the spastic variety can be relieved with relative ease, at least as much as any other gastric ulcer.

In rare instances the pyloric stenosis is congenital, and leads in the very first weeks of life to marked dilatation. Only a successfully performed operation can here save the life of the child.

Before the pyloric stenosis has reached so high a grade that stagnation of food and dilatation of the stomach occur, a stage of hypersecretion is present, which demonstrates itself in a continual flow of gastric juice, the so-called "Gastrosuccorrhea," or Reichmann's disease.

The affection passes through the following stages of development: 1, Ulcus pylori or compression, etc.; 2, Cicatrix; 3, Hypersecretion; 4, Gastrosuccorrhea; 5, Stagnation; 6, Dilatation.

The dilatation can, if medical skill does not intervene, lead to tetany and exitus letalis. Ordinarily, rational treatment brings about a disappearance of the dilatation so that only the stenosis remains; the latter, however, can give rise to a future dilatation. The retrogression takes place thus: Dilatation, stagnation, gastrosuccorrhea, hypersecretion, stenosis. In the case of spastic stenosis this also disappears, and the patient is completely cured, retaining only the predisposition for a recurrence of the trouble. In some cases, however, the pyloric orifice is so contracted by a scar that a knitting needle can barely be passed through. In such cases only an operation can bring relief. These forms can be recognized by the presence of oliguria, and the stagnation even of absolutely liquid food.

Now what is to be said of the so-called "ectasie ex atonie?" In order to answer this ques-

tion and at the same time avoid a misunderstanding, it is necessary to enter more fully upon the consideration of this idea.

We are justified in terming as "dilatation" only those cases where the stomach is enlarged and insufficient; that is, where the greater curvature extends below the umbilicus and where remains of food eaten days previously are found in the fasting stomach before breakfast. If the greater curvature merely lies low down, but the stomach contains no food rests early in the morning, then we term the condition gastrop-tosis. If, however, stagnation be present in the morning, but the greater curvature not displaced downward, then we call the trouble insufficiency.

For a "dilatation" both insufficiency and a downward displacement of the greater curvature are necessary factors. Most cases of insufficiency lead to a dilatation, except in those instances where the physician intervenes, or where strong adhesions retain the stomach in a high position, or finally where the patients at once vomit all the food which they ate. In the latter case the stomach cannot become distended because the necessary weight is absent.

That in benign dilatation sarcinae and hyperchlorhydria develop, whereas in malignant pyloric stenosis lactic acid and Oppler-Boas bacilli are found, is a quite well recognized fact. From these chemical and microscopical findings we determine whether a dilatation is the result of a benign or malignant pyloric stenosis.

The exponents of the "atonic" dilatation, especially Stiller, define the disease entirely otherwise; they call those cases "dilatation" in which the greater curvature lies low in the abdomen, and in which early in the morning splashing sounds can be elicited in the epigastrium. They regard it as inconsequential as to whether stagnation exists or not; they say that dilatation comes first and then stagnation, whereas in the stenotic form the stagnation precedes the dilatation.

These authors thus have a totally different conception of dilatation; they call that dilatation which we call atony or gastrop-tosis. Their form of dilatation does not come within the scope of our consideration. We are endeavoring to find out whether a dilatation *with stagnation* can result from muscular weakness.

Until the present moment no clinical or anatomical evidence in favor of this view has been found. All cases of chronic dilatation which were examined post-mortem showed *without exception* an anatomical obstruction in the pyloric portion of the stomach or in the duodenum, be it a scar, carcinoma, adhesions, compressions or an active ulcer or erosions. Only in cases of acute dilatation following shock, trauma, laparotomy, intoxications or severe indigestion could a paralysis of the musculature be demonstrated, and an absence of an anatomical obstruction noted. These acute dilatations we will not discuss here.

At operations, one also constantly found, in so far as an exact exploration could be made, either scars or spasms of the pylorus. These facts are well brought out in the excellent work of Carle and Fontino.

Now the exponents of the *atonic* dilatation say that the primary factor is the enfeebled motility; then comes hypersecretion, this in turn causes pyloric spasm, and thus the dilatation is produced. Some indeed claim that there can be a direct transition of atony into dilatation.

For this reason Boas has termed atony an insufficiency of the first degree, and dilatation, insufficiency of the second degree. This designation conveys the idea that the conditions differ from one another merely in intensity and not in principle.

In the first proposition, that the atony causes hypersecretion and pyloric spasm, the authors indeed admit a mechanical obstruction, namely, the spasms, as the cause of the ectasie; this group of so-called atonic dilatations must therefore be eliminated, and must, owing to the spasm, be classed with the stenotic form. It is also considered by some as inconsequential and for our purpose even superfluous, to determine whether a pure hypersecretion can produce a pyloric spasm. This latter possibility is denied by many, it being assumed that the spasms can be caused only by an ulcer or erosions on the pylorus. In all these cases, therefore, the authors concede the existence of a mechanical obstruction at the pyloric end of the stomach.

The only remaining possibility is that due to constantly increasing weakness of the musculature, an ectasie develops out of the atony. The question now is, has the latter fact been observed, or is it even theoretically possible?

In the first place, no case of gradual transition of atony into ectasie has, as before stated, been observed. In the literature there are no facts supporting such a condition; the cases of Stiller cannot be considered because they are not dilatations in our sense of the word, but are only gastrop-tosis. What indeed is atony? It is nothing more than a gastric weakness in a co-existent general body weakness, for it is seen exclusively in enfeebled individuals, and never in fat, well-nourished persons. It never occurs primarily, but always as an accompanying symptom of a general muscular and nervous relaxation. Only when the whole body is strengthened does the gastric atony improve.

Atony is thus only a symptom of a constitutional disease, whereas the dilatation is a purely local lesion. Between these two conditions there is therefore a radical difference, and not one of degree. If the atony were a local affection, a primary muscular weakness of the stomach, it would of necessity by overloading that organ be transformed into a dilatation.

In view of this fact one could not then in atony apply a so-called forced-feeding cure for fear of causing a dilatation. But despite the

fact that hundreds and thousands of atonies have been treated with the forced-feeding cure, no dilatation has developed from the atony. On the contrary, the patients have been relieved of their atony as soon as the increased food ingestion improved their general condition. From this it follows: That the teaching that a primary muscular weakness causes the dilatation must be false; also that no "ectasie ex atonie" exists; and that the atony can only then develop into dilatation when a mechanical obstruction of some kind or other appears.

The question has not only a theoretical value, but also an eminently practical significance, in that we no longer fear giving a forced-feeding cure in atony; which we could not do if a dilatation were able to develop from the atony. You may, therefore, in undernourished individuals in whom epigastric succussion, together with a downward displaced greater curvature, but at the same time normal motility, are found, employ the well-known forced-feeding cure or Weir-Mitchell cure.

I will mention briefly the diagnosis of dilatation. The diagnosis itself is easy; but it is difficult in each case to determine the nature of the obstruction—whether benign or malignant, whether ulcer or adhesion, etc. We must do this in order properly to apply the therapy.

As before stated, a dilatation exists as soon as stagnation and gastroptosis are present; if only stagnation occurs, then we have merely an insufficiency, or rudimentary form of dilatation. In a benign form, hyperchlorhydria and sarcinae are found in the stagnant masses; this rule has one exception, as sarcinae are also seen in ulcer carcinomatosum of the pylorus, or in beginning carcinomata. In malignant pyloric stenosis, on the other hand, no hydrochloric acid nor sarcinae are found, but lactic acid is present, together with numerous bacilli; with one exception, lactic acid and bacilli are found in gastritis gravis, that is, a form of gastritis atrophicans in which an inflammatory hypertrophy of the antrum pyloricum occurs, and with it a stenosis of the orifice. This latter condition is most commonly found in alcoholics and is, however, very rare.

It is thus, as a rule, quite easy to distinguish a benign from a malignant dilatation, especially when one considers the fact that the latter form occurs later in life, and appears rather abruptly in a previously healthy individual.

How are the various forms of benign dilatation to be divided? Sometimes this is very easily done, at other times it is impossible; as a rule the classification is made as follows: In an ulcer with cicatrix the patients have had frequent gastric cramps for many years, often also hematemesis, melena or vomiting; the stagnation is relieved by liquid diet, but usually returns with the ingestion of hard food; that is to say the stenosis is already well advanced.

In dilatation following pyloric spasm, cramp-like pains in the epigastrium, so-called epigas-

tralgia, arise regularly several hours after the principal meals, and do not cease until the patient has vomited the food or gastric juice, or has taken some medicament. The stagnation in these cases can be relieved by one to four weeks' treatment. Then the continuous secretion of gastric juice ceases, and only an alimentary hypersecretion persists. The predisposition to recurrence, however, remains.

Dilatations caused by compression or torsion usually show no epigastralgia; they develop gradually, since the gastric musculature hypertrophies in proportion to the increase of the stenosis. In those cases of dilatation following perigastric adhesions, for example, after cholelithiasis, trauma, or ulcerations extending to the serosa, it is impossible to make a positive diagnosis. One can only suspect an etiology, when, for example, many gall-stone colics have occurred accompanied by icterus, etc.

You will see that it is often difficult to determine the exact causes of the affection. Fortunately this is not absolutely necessary for the therapy, for which I will not speak at present.

Gathering all the evidence, I arrive at the conclusion that atonic dilatation does not exist, but that all cases are caused by an obstruction at the pyloric orifice, and if the forced-feeding cure was applied instead of the starvation cure in the cases of the so-called atonic dilatation, more would be convinced that dilatation does not exist as the result of muscular weakness.

ADENOIDS: THE CAUSE OF CHILDREN'S DISEASE MOST FREQUENTLY OVERLOOKED.

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THE difficulty of a specialist writing a paper on a subject in which he is much interested, feeling at the same time that the general practitioner will appreciate it in the same light, is felt by all. Fortunately, you who have given some attention to the subject of adenoids need but a suggestion, while I hope those who have lightly passed it over with the thought "It's something the laryngologists talk about" may become convinced the subject is worthy of a few minutes' consideration.

After thorough study and observation, I believe that, with possibly the single exception of diet, no one condition is responsible for so much or many derangements in childhood as adenoids. Notwithstanding the earnest appeals of its discoverer, Dr. Meyer, and others of our time, and their overwhelming demonstrations of the trouble in its wake, we have not and are not giving it the attention it demands.

This paper may appear to some as a gross exaggeration and the dream of the specialist who sees only these diseases, and so may it be. But, who is there who has carefully examined the throats of many of these children, whom I am about to describe, can say positively they are free from an excess of adenoid or lymphatic

tissue; who, after carefully operating on many and noting the results, is bold enough to assert that this is not the cause? Then, admitting the possibility of a doubt, let each contribute his mite toward putting our profession nearer being an exact science—its hoped-for goal. Until that day comes, none can afford not to look carefully for and eradicate every possible cause of physical and, I might add, mental suffering.

For a concise, convenient, thorough and rather complete treatise on this subject, "Medical Monograph Series No. IX, Adenoids, by Wyatt Wingrave" should be studied. From it I shall make several quotations without further credit.

Historical.—Meyer, of Copenhagen, first named adenoid vegetation and gave first definite clinical conclusions in 1868. To his memory was paid the rare honor, seldom afforded a physician, of having a monument erected in a public place in his own city. I quote the following from Sir Felix Sémon's address at the unveiling of the monument, October 25, 1898: "It is now just thirty years since he was one day consulted by a girl, aged twenty years, who suffered from deafness, whose voice was most peculiar, and the expression of whose face was almost idiotic. Treatment directed to the ears and to the throat failed, and it was not until the puzzled observer one day introduced his finger into the space between the nose and throat that an unexpected solution was met with. Instead of penetrating into an open cavity, the finger was arrested by a large, soft, easily bleeding mass, a condition the existence and nature of which in those days formed a terra incognita. Meyer succeeded in removing this mass by operation, with the result that the deafness was materially improved, the voice became natural, and the idiotic expression of the face disappeared. Gratified as this result was in itself, it was, however, only then that Meyer's real merit commenced. . . . It was at first not easy to convince the bulk of the medical profession, the parents of the mostly juvenile patients and the schoolmasters, that a discovery had been made which, like few others in medicine, was of the most practical importance concerning the development of a healthy mind in a healthy body of the rising generation, and it needed the irrefutable proof of the surprising improvement seen in the subjects of successful operations to make this conviction a universal one. But truth, though slowly, ever forces its onward way, and when Meyer three years ago closed his eyes, he had the satisfaction of knowing that the value of his discovery had at last been recognized. . . . In the last paper on the subject, which Meyer wrote a few months before his death, he showed that the facial expression of some Greek statues and busts which have come down to our times left no doubt that the originals had been sufferers from adenoid vegetations; medieval portraits of historical personages prove the same

fact. Any physician might have conceived the idea of investigating the subject as Meyer did in 1868, but it was left to him to do it, and having done so, to realize the importance of his discovery, whereby he became, without exaggeration, a true benefactor of the human race.

Anatomical.—The nasopharynx is situated behind the nasal cavities, behind and above the palate. Its function is purely respiratory; this should ever be borne in mind. In examination, remember that the atlas may be felt projecting on the posterior surface; the sphenoid and occipital may form a very prominent ridge superiorly dividing the roof into two deep pockets.

Distribution.—The pharyngeal tonsil is the first in order of an interrupted series of lymphoid structures extending through the upper part of the respiratory and the whole length of the digestive tracts in the following sequence: faucial tonsil, lingual tonsil, solitary and agminated glands of the large intestine.

Etiology.—This existing normally at birth need not be considered unless it fails to disappear or becomes hypertrophied or irritated. Remembering the function of the nasopharynx to be only respiratory, then the importance of any obstruction is evident. If this obstruction becomes manifest, we term the gland an adenoid. Wingrave places nasal obstruction early among the causes. I believe it to be a result. It is essentially a disease of childhood, a greater proportion existing between the age of three and fifteen years. He gives 8 cases in 4,000 under twelve months. With a much less total, I have seen more than this number during the first year and believe the proportion at an early age much greater than the large collective statistics show. Sex does not influence it. It occurs more frequently in certain families, indicating heredity as a marked factor. Measles, scarlatina, diphtheria, etc., in a great proportion of cases, seem to mark the beginning of adenoid symptoms. W. F. Chappell¹ says: "Whether as a sequel, or as a port of infection for the exanthemata, we do not know, but that we find an increase of lymphoid tissue after these diseases cannot be denied. More definite conclusions can be formed after it has been definitely proven that the exanthemata are of bacterial origin. We know that chronic hyperplasia of any lymphoid structure predisposes to the infection of tubercle bacilli, streptococci, diphtheria bacilli and pneumococci; then why should it not obtain as well in all diseases of bacterial nature, offering as they do such an easy entrance for infectious organisms?" The lack of proper use of the handkerchief by children is ascribed as an important cause. Among the causes of the acute inflammatory symptoms are sudden climatic changes, damp air, poor ventilation, irritating gases, poor nourishment and stomachic derangement.

¹ W. T. Keener Co., Chicago.

¹ Manhattan Eye, Ear and Throat Hospital Report, March, 1905.

Symptoms.—Dirty nose, snoring, mouth-breathing and vocal defects, especially if accompanied by earache or discharging ears, are pathognomonic. To the experienced person, the appearance of the face first attracts attention. One can pick out adenoid children in a crowd, and frequently find that several if not all belong to the same family. Though by no means infallible, the exceptions are not very common. The expression is chiefly marked by a large open mouth, with a general arrested development of the facial framework. The nose is depressed, the nasal apertures are small, vertical in position (snub nose) with more or less paralysis of the alæ. The cheeks are "flabby"; mouth widely open, "fishmouth," with a general "heavy" or stupid expression. The lower jaw is drooping; lips and buccal muscles are imperfectly used in swallowing and speaking, thick and everted. The eyes expressionless, often squint and may be subject to epiphora, while the forehead may be prominent and the maxillæ with their sinuses are imperfectly developed. There may be varying degrees of torticollis, reflex or due to direct pressure of enlarged cervical glands upon the spinal accessory nerve. The teeth are carious, crowded and prominent. There will generally be more or less nasal discharge with resulting eczema of the nostrils. The nose is stuffy and obstructed, with consequent mouth-breathing, snores at night, struggles during sleep, which may be relieved by turning on side; night terrors are common, as is spasmodic dyspnea, etc. The child has frequently if not constantly cold in the head, coughs at night (cough may be croupy or bronchial). Sore throat, thick, mushy voice, hard breathing when nursing or eating are common, the last so much so that infants frequently show a very strong indisposition to take nourishment. The digestive organs are indirectly affected. Vomiting, diarrhea, furred tongue, defective teeth, difficult deglutition, especially in nursing infants, grinding of the teeth, convulsive twitching of the extremities are signs often mistakenly attributed to worms.

Earache and discharging ears is one of the most common results, and adenoids should be looked for in every such case. Acute and inflammatory eye diseases, especially phlyctenular conjunctivitis and keratitis are frequent in this condition. The children become emaciated, fretful, restless, unable to study, with poor memory, followed by numerous reflex symptoms—dyspnea, asthma, abdominal cramps, convulsions, night cries, cough, torticollis, incontinence, chorea, squint, twitchings, etc. In this place, let me urge that all the symptoms or even any of them by no means are always the result of adenoids, yet, when a child has several or many of these symptoms, and adenoids are found and removed, the results are nothing short of marvelous. This fact can be testified to by many a parent who has traveled with the child for its health, which was only improved after either

returning home or elsewhere meeting with a physician who discovered the cause. To find all these in a given case is the exception; fortunately for the child, but a few are manifest in most cases.

Diagnosis.—Many of these children are entirely neglected, never seeing a physician till some accident brings them. This condition should be thoroughly understood by our school teachers, for next to eye strain, it is the cause of the inability of so many students to advance. A differential diagnosis must be made from lymphatism, syphilitic and gonorrheal rhinitis, congenital occlusion, high-arched palate, small or occluded nostril, unusually small postnasal space, anterior projection of the bodies of the cervical vertebrae, some malformation of the soft palate, hypertrophy of the tongue. There is frequently manifest a mucous coating; also, granular elevations in the upper part of the pharyngeal wall, and adenoids may be seen by elevating the palate and at the same time tipping the head well back.

The mirror in young children is almost useless. The finger is certainly of greatest value, yet adenoids, like tonsils, may be enormously enlarged during an acute attack, but when examined in the office afterward, may escape recognition. Again, I differ with the authorities who say this method is very easy and certain, for with a struggling child, a small nasopharynx, and especially with an examiner not constantly familiar with such work, a diagnosis is by no means certain in many cases. The appearance of blood after the examination is suggestive. Considering the symptoms, exclude other possible causes, make a presumptive diagnosis, confirm it with the curette and at the same time effect a complete and permanent cure without needless pain, worry or anxiety.

Treatment.—Teach the child the proper use of the handkerchief, and to breathe through the nose. Palliative treatment consists of proper cleansing with alkaline solutions and mild astringents. My personal method may be briefly given by illustrating cases. Last Sunday afternoon, with the kind assistance of Dr. C. L. Larson, among the 45 deaf children I was able to examine in the Montana School for Deaf and Blind, at least 9 had adenoids. A little girl showed no particular symptoms; a relative free breathing space; advised leaving her alone. A boy, fourteen years of age, with many of the symptoms I described, including eye disease; general condition at present not good; enlarged glands, etc.; large tonsils; I feared hemorrhage or severe reaction and prescribed iron and iodine until his general condition improves somewhat. Another girl with both adenoids and large tonsils, and unfortunately but naturally slowly failing mentally, said she was advised by her family physician to have nothing done. Six others were operated on, ages six to seventeen; used 10 per cent. cocaine in all; no difficulty with any, and

but two complained a little of severe pain. Of course, all felt it somewhat. In each case careful measurements were made with the finger; any anatomical abnormality noted, and the curette used accordingly.

For the same reasons stated in my paper on nasal surgery, before the American Academy of Ophthalmology and Oto-Laryngology.¹ I advise immediate operation, and disagree with those advocating long preparation.

My experience with chloroform has been so unsatisfactory, and with cocaine so very satisfactory, at present I cannot agree with the many who advise general anesthesia. I admit that many anesthetics may be less dangerous than chloroform, but agree with de Mendoza:² "No one should be exposed to the dangers of death for an operation which should not last more than fifteen seconds, and in which the pain is a negligible quantity. The dangers from ethyl bromide are as real as those from chloroform. Anesthesia is nothing else than a limited poisoning, the first step in a general intoxication; the mortal dose is far from the useful one, but frequently it may be near; occasionally the road is on the edge of a precipice." If one is determined to use an anesthetic it is a crime to make the family of the patient an innocent accomplice by assuring them that the anesthetic is not accompanied by any danger whatsoever.

Conclusions.—1. Adenoids may occur at any age.

2. In a child manifesting any of the symptoms enumerated, adenoids should be suspected.

3. In any child having repeated colds, running nose, ear, or bronchial symptoms, careful throat examination should be made.

4. In every case in which adenoids are suspected of producing trouble, they should be removed immediately if general condition does not contra-indicate.

5. A general anesthetic at any age is not only unnecessary but dangerous.

6. Adenoids may and usually do disappear in adult life, yet, the patient should not be obliged to suffer and wait.

MEDICAL PROGRESS.

MEDICINE.

Ocular Symptoms of Accessory Sinus Affections.

—While the average number of the profession, as W. C. Posey (*Journal A. M. A.*, September 9) remarks, is conversant with the general symptomatology of sinus disease, there are yet many of the less striking symptoms with which they are less familiar. Many of these are among the earliest ones and are attributed to eyestrain and refraction advised. In some cases the use of atropine employed to put the ciliary muscle at rest dries up the secretion and actually effects a cure. This, however, does not always happen, and much damage and loss of time may follow the error. Among the less fre-

quent symptoms he includes implication of the optic nerve and disturbances of vision. The condition, he states, is to be studied by the usual methods with the ophthalmoscope, test cards, perimeter, etc. Orbital disease is usually secondary to sinus disease, and one of the earliest signs is a change in the contour of the orbital ring. The particular sinus involved cannot always be made out, but the character of the orbital displacement is often significant. Optic nerve involvement, circulatory disorders of the orbit and conjunctiva, etc., may also be of diagnostic value, but the symptoms may be obscured by the anatomic variations of the sinuses, which are not infrequent. Sinusitis is only rarely a direct cause of lacrimal disease, though it may more frequently produce it indirectly by way of the nasal mucosa. Edema of the lids is one of the most significant signs of accessory sinus disease, and may often first call attention to its existence. It is non-inflammatory, is usually most marked on the upper lid, and in the morning, disappearing during the day. A persistent blepharitis may accompany the chronic conjunctivitis of sinus disease, and may disappear only with the removal of its cause. The close anatomic association of eye muscles and nerves accounts for the occurrence of ocular paresis or paralysis from sinus disease. Paresis, indeed, may occur in very mild cases, and Posey is of the opinion that if many of the cases of palsy of extra-ocular muscles attributed to rheumatism were analyzed an affection of a sinus would be found to be the underlying cause in many instances. Conjunctivitis may be the result of the general mucous congestion, and occasionally there may be an implication of the cornea, either indirectly from the exposure incident to the exophthalmus, etc., or by implication of the fifth nerve. Pupillary changes may accompany the optic neuritis when it exists. Posey considers that intro-ocular affections, uveitis, etc., must be very rare, though some authorities hold that they are frequent. Refraction disorders and asthenopia occur from the pressure on the orbit and inflammatory interference with the musculature, etc. Headache and neuralgia are pretty constant attendants of sinusitis, and while not always characteristic, are often decidedly so. The special features are given in detail. Other symptoms of a general character, fever, evidences of cerebral congestion and irritation, neurasthenia, gastric disturbances and even marked mental symptoms may also be induced. Cerebral symptoms indicating involvement of the meninges or sometimes even brain abscess may occur.

The Principles of Life.—M. L. PRICE (*Journal A. M. A.*, September 9), after criticizing Metschnikoff's well-known theory of senility, finds only three theories that will properly account for the condition: First, that the failure of the cells is due to successive and repeated inflammations, causing the replacement of the proper cell substance by scar tissue incapable of assuming its functions. Second, that the failure of the cell is a nutritive one, the cell becoming unable, with the advance of time, to keep up the metabolic processes needed in its special functions. Third, that the cell failure is due to the loss of properties enabling it successfully to resist the constant activities of pathogenic organisms and toxins. There are objections to the first of these: senile changes occur evidently without reference to prior inflammatory conditions, and it does not satisfactorily account for the loss of the power of reproduction and regeneration. There is, however, a failure both

¹ Laryngoscope, December, 1904.

² Abstract, *MEDICAL NEWS*, April 14, 1905.

of nutrition and resistance in senility, and the author offers the theory that the cell is endowed very early in its existence with a specific substance, the presence of which is essential to its functions, that this substance becomes progressively exhausted during the life of the organism, and that it alone, of all the materials of the cell, is not renewed after a certain early stage of its existence. This hypothetical substance he calls bioplasmine, and he represents the probable constitution of its molecule by a graphic formula. He discusses at length the properties and action of this substance in growth, heredity, etc., and speculates on the possibility of its isolation and the possible practical results. The first advance to be made in prolonging life would, he thinks, be in stimulating the activities of the bioplasmine in giving off the substances necessary for metabolism when this can no longer be accomplished by the physiologic stimulus. It is not likely, he says, that the bioplasmine molecule is ever so much reduced during life that there are not a considerable amount of these substances in combination. It is to the physiologic chemist, he states, that we must look for the clearing up of the problem of the prolongation of life, and it is not too much to expect that our descendants of 1,000 or 5,000 years hence may realize or exceed the ages of the patriarchs of the Mosaic chronicles.

The Fat of Top Milks.—J. W. ENGLAND and C. H. LA WALL (*Journal A. M. A.*, September 23) have examined the certified milks sold in Philadelphia and find that quite a number of factors influence the fat percentage. The richer the upper layers of top milks in fat the poorer the lower layers. The differences in the fat percentages of top milks in pint and quart bottles respectively are marked, especially in the lower layers. The extreme range of variation between minimum and maximum was from 60 to 170 per cent., and the maximum variation of the whole milks examined was nearly 50 per cent. The quart bottles of the Philadelphia milks follow the Winters standard very closely for the upper one-half ounce, one ounce, two ounces and four ounces. Above that, the differences are wide. The pint bottles of certified milks follow Winters standard very closely for the first one and two ounces, but differ widely for the rest. The one-pint bottles should not be used for obtaining top milks for infant feeding, as the differences of fat percentage are too great. While the differences are not so great in the case of the quart bottles as to justify the disuse of the top milks, it should be remembered that in cow's milk, as in human milk, the ratio of fat to proteid is highest at birth and gradually decreases until the period of dentition is reached: for this reason the fat percentages of cow's milk are most variable. As is well known, the most uniform milk is that of a herd rather than that of a single cow. The same rule holds true as regards the other constituents of milk, though not to the same extent. The authors say: "Apparently the best results in top milk infant feeding are to be had by approximating percentages; that is, by having them reasonably accurate and then adjusting, if necessary, the relative proportions of top milk and diluents to suit the individuality of the child."

By Way of the Oyster.—At such time of year, when the magic "r" is lacking from the names of the months, a brief against the oyster stands a better chance of a dispassionate hearing than when the succulent shellfish reigns supreme as the precursor of

Epicurean and the sequel of Thespian delights. While deprecating the panic which was precipitated some years ago by the suggestion that the raw oyster was an important etiological factor in localized epidemics of typhoid fever, the judicial mind must admit a grave element of danger in this widely consumed article of diet. Any lingering doubt upon the subject should be set at rest by a study of the statistics presented in Caleb Allen Fuller's article in the report of the Commissioner of Fisheries for the year ending June 30, 1904. Mr. Fuller has collected a convincing list of epidemics following the consumption of shell-fish. Characteristic among them is that which occurred at Wesleyan University in October, 1894. On the twelfth of that month seven college fraternities had their initiation ceremonies and celebrated in the usual way with a supper. Eight days after several students were reported sick with a moderate degree of fever, and shortly after November 1, twenty-three cases of typhoid fever had developed. Investigation proved beyond a doubt that the water supply was above suspicion and that the sanitary condition of boarding and lodging houses was perfect. All the men affected were members of three fraternities which had obtained their oysters from a local dealer. One other fraternity had oysters from the same dealer, but these were eaten cooked, whereas the other three lots were served raw. Two of the remaining three fraternities did not have oysters, and the other one obtained its supply from a dealer in Hartford. Only one non-fraternity man contracted the disease, and investigation of his case only established the more firmly the responsibility of the local supply, for this man had eaten of the same lot of oysters at the dealer's shop. Inquiry brought out the fact that two of five men from Yale who had been guests at the exercises of the societies were seized with typhoid fever some time after their return to New Haven. Further investigation showed that the oysters had been stored at the mouth of the Quinnipiac River, 300 feet from the outlet of a small drain from a house in which two persons were sick with typhoid fever. Other epidemics leading to the same conclusions were reported from Portland, Me., in 1900, and from Atlantic City, N. J., in 1902, and a large series of them have occurred throughout the coast towns of Europe under similar circumstances. Thus far the argument is of the *post hoc ergo propter hoc* variety; nor is it removed from that category even by the investigations which show that the oysters came from waters subjected to sewage contamination. But Mr. Fuller, following the lead of Drs. Bulstrode and Klein, who conducted an exhaustive series of investigations for the English Government, has studied the bacteriology of oysters from polluted and non-polluted sources. His experiments have been more conclusive than those of the English investigators, who were unable to show a constant relation between sewage pollution of the water and the infection of the water with fecal bacteria. Space is lacking for even an approximate indication of the breadth of his experiments. Suffice it to say that they demonstrate undeniably the fact that the normal bacteriology of the oyster has no place for bacteria pathogenic to man, and such are never found in oysters taken from uncontaminated waters. On the other hand, oysters from polluted waters show the contaminating bacteria to such an extent that those uninfected constitute, as far as statistics are concerned, a merely negligible quantity. To be sure, it is quite possible to find a fair percentage of oysters whose powers of resistance have prevented the entrance of the bacteria into their organism; but

this fact is of small moment to the consumer, since the liquor within the shell shows practically the same analysis as the surrounding water from which it has been taken. If the oysters were always taken from their native beds directly to the consumer, the risk would be lessened, since the oysters themselves suffer in the contaminated waters, often dying in large quantities and failing to develop into a commercially desirable article. But perfectly healthy oysters from unpolluted sources are frequently infected through the so-called "fattening" which consists in depositing them in fresh water, which, near the large towns where the oyster is marketed, is often impregnated with sewage. Mr. Fuller's report demonstrates unmistakably that the presence of *Bacillus coli* in shell-fish is an indication of sewage pollution, and an interesting corollary of this demonstration is found in the fact that oysters taken at a distance of five or even seven miles from a point of sewage outlet contained excremental bacteria. Altogether, it would seem that the infection of this important food supply should be one of the points considered in the vexed problem of sewage disposal.

Bronze Diabetes.—Many different theories have been promulgated to explain the coincidence of the three conditions: general hemosiderosis, hypertrophic cirrhosis of the liver and diabetes, commonly known as bronze diabetes. O. HESS and E. ZURHELLE (*Zeitsch. f. klin. Med.*, Vol. 57, Nos. 3 and 4) have carefully studied two cases and are of the opinion that the condition is a general cellular dystrophy leading (1) to the appearance of two abnormalities: A fixation within the tissues of the blood coloring matter resulting from the increased breaking down of red cells and an increase of the connective tissue, particularly in the liver; (2) a lowering of the normal property of oxidizing carbohydrates.

Positive Venous Pulse in Anemia.—Occasionally a distinct positive venous pulse may be observed in patients where it is absolutely certain that an endocarditis is not present. W. v. LEUBE (*Zeitsch. f. klin. Med.*, Vol. 57, Nos. 3 and 4) draws attention to the fact that this phenomenon is not an uncommon symptom of anemia and is due to a relative, muscular insufficiency of the tricuspid orifice. The cause therefore is the same as that of the mitral insufficiency so common in chlorosis. In order to make sure of the functional character of the condition, it is important to bear in mind that a relative tricuspid insufficiency in anemia develops at the same time as the mitral insufficiency, while in endocarditis the tricuspid lesion usually develops long after the mitral. Besides, disturbances of compensation are, as a rule, absent in anemia. In a few cases of anemia, a positive venous pulse was observed without symptoms of tricuspid insufficiency; it is probable, however, that here the insufficiency was latent. In certain instances the pulse was not very evident at first, but was rendered so by compression of the liver or the inferior vena cava. In all cases the symptom disappeared as the patients improved.

Polycythemia with Splenic Tumor.—From a study of the cases described in literature and several which he himself has observed, P. RECKZEN (*Zeitsch. f. klin. Med.*, Vol. 57, Nos. 3 and 4) concludes that polycythemia with splenic tumor is a special disease which appears during the middle periods of life. Jews seem to be more predisposed than gentiles, and the first symptoms are indefinite (headache, vertigo, general weakness and gastro-intestinal disturbances). When the disease is well developed, the patients

present a marked cyanosis of all the visible mucous membranes and the skin with dilatation of the veins and often hemorrhages. The spleen is usually very hard and may extend down to the umbilicus or even the crest of the ilium. The most characteristic blood finding is an increase of the hemoglobin, sometimes to 150 per cent., and a very high number of red cells. As high as 12,000,000 has been estimated for a cubic millimeter. The white cells may or may not be increased, and normal percentages for the different forms are generally obtained. The specific gravity of the blood and the amount of albumin present are usually above normal. In a few cases that came to autopsy, a cheesy tuberculosis of the spleen was found, but this is not constant, and splenic tuberculosis may also exist without giving rise to this disease. The part which the bone-marrow plays is as yet undecided. In one of the author's cases the polycythemia affected only the upper part of the body; here a malignant tumor of the thymus and the lung was compressing the upper vena cava. The great importance of stasis is also evident from several animal experiments: When the upper vena cava of rabbits was stenosed by means of a ligature, an increase in the number of red cells in the circulating blood was almost always obtained. The course of the disease is usually very chronic, and the prognosis is generally bad. Quinine, arsenic and regulation of the diet have been recommended. Some clinicians have resorted to venesection, but the benefit derived from this was only temporary. Splenectomy may be indicated for those cases where a tuberculosis of the spleen is present, yet it will only rarely be possible to diagnose this condition during life, and the hemorrhagic diathesis of these patients will make an operation of such severity very difficult.

SURGERY.

Acute Tetanus Treated with Intracerebral Injections.—Every case reported, which bears upon this most important subject, is very welcome. K. S. STORRS (*Lancet*, September 23, 1905) gives the detailed history of a case of tetanus occurring in a man thirty years of age, treated by early intracranial injection. He notes particularly that the case was acute, the first symptoms developing ninety hours after the receipt of the injury. The symptoms, which manifested themselves before the spasms commenced, were further noteworthy. The author considers that the early resort to serum treatment saved the patient, and relates that in one of his previous cases, which had been treated unsuccessfully with intracerebral injections, they had not been used until the spasms were well established. No less than four injections of the antitoxin were made into the infected arm, care being taken that the nerve be intimately surrounded with the antitoxin. This, in the author's opinion, was a direct and rapid means of bringing the anti-bodies in opposition to the toxins, because the latter had been proven to travel centrally along the course of the nerves.

Wiring the Patella.—This subject, though old, is by no means as yet laid on the shelf. C. M. MOULLIN (*Lancet*, September 23, 1905) reports the history of forty consecutive cases which have been under his care during the last eleven years. During the last eight years, having become convinced that every case, irrespective of the age of the patient, should be wired, all were subjected to operation. In the first twenty-eight cases all the methods of subcutaneous wiring, and all with the exception of Baker's,

were found wanting. This last operation, which consists of passing a wire vertically around both fragments through the patella ligament below and the tendon or the quadriceps above, the ends being twisted together on the cutaneous surface, the author had practised four or five years ago. The results appeared to be good until they were scrutinized with the X-ray. This method of examination showed that union was not osseous. The fragments were tilted, and in every case not closely enough apposed to admit of more than cartilaginous union. As the wire was tightened, the tilting became greater. The last twelve cases had been operated upon by the open method, with an enormous saving of time and inconvenience. Operation was performed on the third or fourth day. A single stout wire was passed through and the ends twisted until the fragments were in exact apposition. No antiseptic whatsoever was allowed to touch the interior of the joint. The fascia on the cutaneous surface of the patella was carefully united as was also the lateral aponeurosis. On the third or fourth day active motion should be begun.

The Bartlett (Boston) Machine for the Reduction of Congenital Dislocations at the Hip.—J. RIMLON (*Chic. Med. Rec.*, September 15, 1905) concludes, from an extended use of the Bartlett machine, that its use does make the reduction easier for a strong man and possibly for any man. He believes it does greatly diminish the risk of fracture of the neck or shaft of the femur. It diminishes the risk of nerve injury and paralysis, and of rupture of the femoral vessels and gangrene, provided only suitable cases for operation are selected. Otherwise it adds to the risk. The machine places an enormous force in the hands of the operator, and if he chances to be inexperienced or foolhardy, it does not diminish the risk to the patient. In the hands of a careful and skilled operator it does diminish the risk very materially.

The Law of Consent in Regard to Operations.—Recent cases in court involving the question of consent to an operation have attracted considerable attention, and have been the source of discussions in the lay as well as the medical press, showing a danger, too little realized, to which the physician is constantly subjected. A. N. TAYLOR (*St. Louis Med. Rev.*, August 5, 1905) reviews this subject carefully and makes the following statements: The physician is brought to the conclusion that he must in all cases either keep within the strict scope of the authority expressly given to him, or must surround himself with such safeguards that he can show to the court and jury, by the testimony of thoroughly reliable witnesses, that he was employed to perform such operation as might be found necessary or desirable to be performed at the time of operating, and that the operation actually performed was so necessary or desirable to be performed at that time. The question from whom consent must be obtained is one upon which there is some confusion, as indicated by the decisions of the courts. It is laid down as a general rule that the consent of the husband must be obtained before an operation is performed upon the wife. Such consent is, however, usually implied where the husband places the wife under the surgeon's care, and especially where he understands the character of the operation to be performed. At times the court takes the position that consent of the wife is all that is necessary; that the positive prohibition of the husband would not

legally hold the physician from operating, if the wife requested the operation to be performed. It would not be wise, however, for a surgeon to operate in the face of such prohibition, for by so doing he would surely invite litigation. In case operations are to be performed upon children or others incapable from mental weakness of understanding the import of the proposed operations, then consent should be obtained from the parents or other persons in "loco parentis," or from the relations or those legally responsible for the care and protection of the person of the incompetent. Absence of consent may be made the gist of an action, not only in cases of operation, but wherever professional services are forced upon a protesting patient. Consent to perform a post mortem must also be had, except when performed in fulfilment of a requirement of the law.

An Attempt to Utilize the Electric Conductivity of the Urine for Clinical Purposes.—To determine whether, if in a given case, one kidney should be removed, the remaining one would be capable of attending to the eliminating process alone, G. KOLISHER and L. E. SMITH (*Chic. Med. Rec.*, September 15, 1905) have performed a number of experiments on the electric conductivity of the kidneys and have arrived at the following conclusions: If this method should prove to be true it would offer the following advantages: (1) It makes the examiner independent of any general normal standard for the molecular and osmotic concentration of the urine. (2) It is unnecessary to put the individual for several days under a certain uniform diet previous to the testing of the kidneys. (3) The test for electric conductivity requires only 2 c.c. of urine. (4) This test does not require a comparative testing of the molecular and osmotic concentration of the blood. Doing away with the disagreeable feature of bleeding the patient. (5) This test seems to be a true functional one, inasmuch as the simple adding of the stain to the urine does not show the same changes of conductivity as produced by bringing the stain into the circulation. (6) There seems to be a fair chance that it will be possible to determine, previous to administering general anesthesia, whether chloroform or ether will produce an undesirable reaction of the kidneys in giving such an anesthetic. (7) In cases of renal pyuria it seems to be possible to determine whether the inflammation is entirely confined to the pelvis of the kidney or whether it involves also the secreting parenchyma.

Enlargements of the Testis and Epididymis.—D. N. EISENDRATH (*Chic. Med. Rec.*, September 15, 1905) classifies the enlargements of the testis and epididymis under the following heads: (A) Acute. (1) Gonorrhea almost invariably involves the epididymis, seldom the body of the testis, or orchis proper. (2) Trauma almost always involves the body of the testis proper and but seldom the epididymis. (3) Epidemic parotitis or mumps, as a rule, affects only the orchis, or body of the testis proper. (4) Cystitis of non-gonorrheal origin is a frequent secondary complication, as is also inflammatory enlargement of the epididymis. (B) Chronic. (1) Tuberculosis is the most frequent cause of chronic enlargement, and, as a rule, first involves the epididymis, especially the tail of this portion of the organ, and later involves the body of the testis proper. It gives rise to a peculiar, nodular, very firm condition of the epididymis, feeling like a series of beads, and often extending in a similar manner up the vas defe-

rens. (2) Syphilis in the majority of cases involves the body of the testis proper, and but rarely the epididymis. There are, however, exceptions to this, in which tertiary syphilis involves the epididymis, as well as the body of the testis. (3) Tumors or neoplasms of the testis may be either benign or malignant; the benign belong to the class of adenomas, or chondromas, the malignant most frequently to the class of sarcomas.

X-Ray Diagnosis of Renal Calculus.—The object of this method is to obtain a photographic negative of the kidney region, with a view to seeing whether or not there is evidence of the presence of a stone. MORTON SMART (*Brit. Med. Jour.*, September 16, 1905) thinks the most important factors in determining this point are, the size and composition of the stone, the subject under examination, and the condition of the kidney. A small stone offers less resistance to the rays than a large one; therefore the shadow may be so slight and so small as to be easily overlooked. Pure uric acid calculi offer very little obstruction to the rays, and therefore are the most difficult to detect, but fortunately such stones are rare. Usually uric acid stones have a sufficient coating of oxalate or phosphate of calcium to throw a shadow. The oxalate of calcium stones throws the densest shadow, and pure phosphatic calculi are difficult to see, whereas the urates occupy an intermediary position. The size of the subject is to be more particularly regarded in connection with adults than with children, on account of the greater resistance of the parts in adults. The ratio of opacities between body plus stone and body minus stone approaches more nearly to unity the greater the thickness of tissues through which the rays have to pass. Thus the thinner the patient the more sharply defined will be the negative obtained. The condition of the kidney itself enters largely into the definition of the shadow. Calculi may cause more or less induration of the kidney tissue, which tends to increase the opacity to the rays, and may obscure the stone entirely. Again, the stone may be completely obscured by the dense shadow of surrounding pus. Another point to be remembered is that the nearer the object is to the plate the greater will be the contrast in the negative. It is advised that a second negative be made under as nearly the same conditions as possible after an interval of about three days. Stereoscopic photography in connection with radiography is considered well worth while.

Surgery of the Stomach.—BEVAN (*Am. Med.*, September 30, 1905) deprecates unnecessary operations, due to too great enthusiasm of qualified operators, and the undertaking of this class of work by men who are not fitted. He then discusses surgical treatment of gastric carcinoma, and of gastric ulcer, complications and sequels. He urges for carcinoma radical removal or non-interference, and is not in favor of the palliative measure of gastro-enterostomy. In technic, he prefers the suture to the use of either Murphy's button or the McGraw ligature. Ulcer is the province of the surgeon only after intelligent medical treatment fails. The complications and sequels of stomach ulcer, which demand surgical treatment, without question are perforation, obstruction of the pylorus, hour-glass contraction of the stomach, and such secondary conditions as perigastric adhesions and abscess, subphrenic abscess, etc. One of the sequels which must be considered is that of a carcinoma developing in the ulcer. There can be but little doubt but that this does occur very fre-

quently. Pyloric obstruction and dilation of the stomach furnish by all odds the most satisfactory groups, as far as the results from surgical treatment are concerned; these cases should practically all be submitted to surgical operation with marked advantage to the patient.

Congenital Umbilical Hernia.—CHARLES GREENE CUMSTON divides congenital umbilical hernia (*Med. Rec.*, September 23, 1905, into embryonal hernia and fetal hernia. In embryonal umbilical hernia three varieties may be distinguished. The first may be termed umbilical eventration and is characterized either by an arrest in development of the abdominal walls or by a defect in their union. The second is the diverticular umbilical hernia due to the persistency of the omphalomesenteric duct. The third may be termed hernia of the vitelline loop. Fetal hernia develops after the formation of the umbilicus. This is a true hernia, having a sac lined with peritoneum. Two membranes may be distinguished over the portion of the dilated cord. The external integument is formed by the dilated umbilical cord and is represented by the amniotic membrane. The internal lining represents the sac. Generally the two umbilical arteries are situated outwardly and below, while the vein is usually found above. The insertion of the cord to the tumor is usually at the side, most often the left. In cases of irreducible hernia the insertion preferably takes place at the apex. Frequently congenital umbilical hernia is accompanied with other congenital malformations. Also malposition of the viscera is common, as is hypertrophy. The mesentery may possess a greater length than normally. Malformation of the genital organs are frequent, consisting principally of a double uterus or vagina, epispadias, a bifid penis or clitoris, accompanied by pubic fissure and exstrophy of the bladder. Malformation of the intestines, such as absence of the anus or rectum, stricture or occlusion of some portion of the canal are common. Congenital umbilical hernia is relatively rare, occurring about once in from two to five thousand births. It is about twice as frequent in males as in females. Children afflicted with very large eventrations are usually born dead at or before term. Anemia is believed to be the cause, and quite frequently the anemia is due to the absence or slight development of one of the umbilical arteries. The formation of embryonal hernia is due to the fact that the borders of the somatopleure do not reach the median line on account of arrested development, the thoraco-abdominal cavity does not close in front, and the viscera, which should fill it, are consequently placed outside the body. This arrested development gives rise to an excessive shortness of the umbilical cord. Another cause of embryonal hernia is a defective regression of the omphalomesenteric duct. Instead of thinning out and finally breaking, the duct when thick retains the intestine outside of the umbilicus beyond the normal time, and an umbilical hernia forms. Fetal hernia is produced by the same mechanism that arises in umbilical hernia of children and adults. The diagnosis is not difficult, but a sufficient number of fatal mistakes have occurred from the non-recognition of obscure herniae to suggest the advisability of caution. The prognosis varies according to the size and variety, being more grave in the larger herniae and the embryonic variety. A number of operative methods are described, and it is advised that a selection of the various technics be made according to the needs of the individual case. Opera-

tion should be resorted to as soon as possible after birth.

Surgical Treatment of Strabismus.—SYDNEY STEPHENSON discusses the topic of tendon lengthening (*Lancet*, September 23, 1905) as a cure for squint. This procedure is more exact than simple tenotomy. The lengthening of the tendon should be directly proportionate to the linear measurement of the squint. The two most practical ways of effecting this are: (1) A long oblique incision is made with scissors, commencing near the lower border of the scleral insertion and terminating at the upper border of the muscle, some distance from its tendinous attachment to the eyeball. The two ends of the tendon are then united by a couple of points of interrupted suture. (2) The lower half of the tendon is cut through some little distance from the scleral insertion, and the incision is carried along the center of the tendon, midway between its upper and lower border, finally to be brought out at a right angle to its former course. The free ends left by this step-like incision are united by sutures. Tendon lengthening may or may not be combined with tenectomy and advancement of the antagonistic muscle. As a rough rule, whenever the outward excursion of a squinting eye is found to be reduced, or when there is a high degree of amblyopia in the misdirected eye, the combined operation should be performed. A squint of over 15 degrees angular measurement furnishes another indication. It is more satisfactory to undertake these operations under local anesthesia.

NEUROLOGY AND PSYCHIATRY.

Three Cases of Tumor of the Spinal Cord Operated on with Good Results.—J. COLLINS WARREN (*Am. Med.*, Aug. 26, 1905) reports two cases of localized tumors of the spinal cord in which removal completely relieved the symptoms, and a third case in which operation was only palliated but was followed by marked improvement. In Case I, a woman of fifty years had complained for fifteen months of increasing attacks of pain widely distributed over the left side and upper abdomen. For six months before the operation she had had increasing difficulty with the movements of the left foot, impairment of sensation on that side, incontinence, and exaggeration of the deep reflexes. Laminectomy was performed and a fibroma removed from the pia the size of an olive at the level of the ninth dorsal vertebra. Recovery was complete but slow, some symptoms persisting for six years, but she has been practically well for one year. In Case II, a woman of twenty-seven years had suffered from pain in the lower left side for two years. For six months before operation she had had some impairment of motion in the left foot, and for a few days before seeking advice had been unable to walk. There was loss of sensation over both legs, paralysis and marked increase of the reflexes. At operation a tumor three-fourths of an inch in diameter was found at the level of the eighth dorsal vertebra, and was removed, proving to be a psammoma. Recovery was rapid and the patient was well six months after operation. In Case III, a man forty-nine years, had shown symptoms of disease of the cord for twenty-five years, and for sixteen years had been paralyzed below the waist as regards motion, sensation and the control of the sphincters. Fourteen years previously laminectomy had been done with some relief. The second operation, in January, 1898, was done on account of symptoms of rapidly progressive general paralysis. Fragments of an in-

tramedullary tumor (endothelioma) were removed and the canal drained for two weeks. Improvement was rapid, and for the past two years the patient has been able to work.

The Normal Malay and the Criminal Responsibility of Insane Malays.—Major CHAS. E. WOODRUFF (*Am. Med.*, Aug. 5, 1905) says the Malay is found to resemble some of the North American Indians, and all the cruelty so well known in our dealings with Indians has been duplicated in the Philippine wars. The intelligence of the Malay is also quite limited, and their brains are much smaller than those of Northern Europeans. As a consequence, the Malay is like a cruel child, delighting in the sufferings of others, and is naturally bloodthirsty. An epileptic murderer is described, whose sanity was questioned by reason of the cold-blooded manner of the crime, but comparing the deed with the actions of normal Malays, the conclusion was inevitable that there was no evidence of insanity whatever. Incidentally, it is shown that the ordinary means of eliciting testimony under oath in our courts do not succeed with Malays, who have no conception of the necessity of telling the truth. Indeed, false swearing is a fine art whenever it is to the interest of the witness to conceal the truth. The jury system cannot be used because of the false conclusions to which the Malay arrives even should he have facts on which to reason. It is shown that a mistake has been made by providing no means for the trial of white men by white judges, as experience in other tropical countries has proved it to be unsafe to trust a European to native judges. Though the Malay cannot be trusted with political power, he must be compelled to obey civilized law and cease his savagery, because life and property must be made safe in every part of the world where white man's needs take him. The Americans have already made great progress in the Philippines in restoring order, and there should be no unjust or ignorant criticism nor any clamor to give the Malay a freedom he cannot sustain, nor a part in a government he cannot understand. He is to be helped and not abandoned, as was the negro.

Tetanus.—J. M. ANDERS and A. C. MORGAN (*Journal A. M. A.*, July 29) give a preliminary report of their statistical study of 1,201 cases of tetanus, collected from the literature and by direct correspondence, with special reference to the incidence of the disease in the United States. They find convincing proof that tetanus is invariably the result of the introduction of the germ, and that the so-called rheumatic or idiopathic tetanus does not exist. They also find that it is endemic in all large centers of population, that in some localities where it was formerly common, notably in Long Island, it has become rare, and that occasional small epidemics, traceable to a definite source, occur in limited localities, as, for instance, in hospitals, etc. It appears also that tetanus is more prevalent in the hotter part of the year, that males are more subject to it than females, and that it is less frequent in advanced age. The robust are more susceptible than the weak and the nervous than the lymphatic. There is much evidence that the disease is transmissible and may give rise to epidemics. The germ, Nicolaier's bacillus, is rarely introduced by the alimentary tract, but usually through open wounds, all parts of the body being very susceptible. A number of interesting clinical features observed in the cases collected are related, and it was noticed that the characteristic symptoms, especially trismus, were generally present. The diagnostic importance of the tonic contractions as opposed to the intermittent ones in certain other conditions that simulate tetanus, such as strychnia

poisoning, is emphasized. The authors found that their studies supported the earlier ones as regards the mortality, which decreases gradually after the tenth day and rapidly after the fifteenth. The study showed clearly the value of immediate radical local treatment, and that the most important thing is to open the wound freely in all directions under general anesthesia. Many patients were more or less benefited by the local carbolic acid treatment, and some observers report good results from the local use of ice or freezing mixtures or treatment in a cold room.* For palliative treatment, chloral and the bromids appear to have been most extensively used. Calabar bean has been much employed, and also morphin, which should be used with caution on account of its inhibitory action on the respiratory centers. There is no question as to the value of antitoxin as a prophylactic; the testimony is uniformly in its favor. It should be used in any case in which there is suspicion of tetanus infection. In a well-developed case of the disease it has no appreciable beneficial effect, neither reducing the mortality nor hastening recovery.

The Motor Function of the Optic Thalamus.—An investigation of the muscular rigidity that frequently occurs as the result of lesions of the brain, particularly of the base, was made by F. H. THIELE (*Journal of Physiol.*, July 13, 1905). He finds that the optic thalamus contains in its posterior part on each side a center which controls the co-ordinated movements of walking. It is possible that some of this center extends to the corpora quadrigemina. The path by which control is effected appears to be the thalamo-rubro-spinal. The function of this tract is quite independent of that of the pyramidal tracts, since the center and tracts cause the same movements when the pyramidal fibers are completely degenerated in one or both sides. The optic thalamus exerts an inhibitory control over the opposite anterior cornual cells. The path along which this control is exerted decussates high up in the mesencephalon, and is probably along the thalamo-rubro-spinal tract. The optic thalamus does not appear to exercise any marked continuous control over the opposite cerebellar hemisphere by way of the thalamo-pontine, ponto-cerebellar fibers. The cerebellum does not appear to exert a continuous controlling function on the opposite optic thalamus by way of the superior peduncle, and results so interpreted may be really due to injury of the deeper mesencephalic spinal tract. The cerebellar cortical cells appear to exert an inhibitory action over Deiter's nucleus on both sides, but the effect is most marked homolaterally. Deiter's nucleus appears to exercise a continuous adjuvant action on the homolateral cornual cells along the Deiter spinal tract. This action is normally kept in check by the cerebellar cortical cells, since removal or depression of the function of these cells causes rigidity to occur. Stimulation of these cells causes the relaxation of pre-existing rigidity. The cerebellum through its peduncles governs the skeletal muscles, and is capable of producing movements. The control affects both sides of the body, but the hemolateral control is the most important. The muscles especially affected are those of the trunk and girdles. For the maintenance of the tonus of the muscles the reflex arc is necessary. The ascending spinal tracts do not appear to be necessary. From these results it is again proved that movements of great complexity, such as those of progression, can be carried out in the absence of the cerebral cortex altogether, and that this mechanism exists in the optic thalamus at its posterior part. The muscular mechanisms thus centered together are of wide spatial distribution and employ the limbs of both sides and the trunk, thus

differing from the highly specialized cerebral cortical mechanisms which employ much more limited groups of muscles. The broad structural linkage of the cerebellum with the thalamus, according to these experiments, appears to function in keeping these two important structures in co-ordination.

The Treatment of Tabes by Exercise.—That great care must be exercised in applying this measure to the treatment of tabes, is the statement made by H. S. FRENKEL (*Berl. klin. Woch.*, June 5, 1905), who also claims that more harm than good will result from its improper application. The mistake is often made of confusing simple muscular exercise with the practice of movements of coordination, so that in many cases the slight power which the patient possesses to coordinate his movements is often entirely lost. This form of treatment is directed against one symptom of tabes—the disturbance of coordination, and all the actions of the latter must be learned over again, and if this power has been lost, every muscular act must be learned likewise, as would be done in a child. The steps associated with each movement must be separately rehearsed until the ataxia is sufficiently improved to permit the entire movement to be attempted. As the ataxia is due to deficient sensibility rather than to loss of muscular power, it means that those centers which preside over a coordinated action which he has succeeded in learning have become educated to get along with a subnormal degree of sensibility. The sense of fatigue in tabetics is diminished, and therefore it is well to restrict their exercises to sessions of not more than five to fifteen minutes, twice daily. As the pulse-rate also rises after each exercise, it is well to await until it goes back to the normal before attempting another movement. The prognosis varies with the length of time the treatment has been kept up as much as with the severity of the disease. An improvement probably always takes place, and in some cases where the ability to stand or walk had been entirely lost, the author found it necessary to keep up the treatment for six and even twelve months. Conditions which exert an unfavorable influence on the prognosis are long attacks of pain, stomach and intestinal crises, rapid heart action, a marked degree of hypotonia, with extensive distention of the joint capsules.

PEDIATRICS.

Summer Diarrhea.—J. C. COOK (*Journal A. M. A.*, August 26) reports the results of bacteriologic and blood examinations in fifteen infants suffering apparently from summer diarrhea during the months of July and August, 1904. In eleven non-fatal cases, averaging nine and one-third months, in which the children had been carelessly fed by poorly nourished and ignorant mothers, the most striking bacteriologic findings were the frequency of the pneumococcus, this micro-organism being found in seven cases each of examinations of the stools and the throat. The colon bacillus was found in the stools in seven and in the throat in six cases. The bowel movements were not excessively frequent, averaging four daily in these milder cases. In one of the fatal cases, well-marked bronchopneumonia existed and the pneumococcus was present in every organ examined, as well as in the blood and stools. The same complication was present in another of the four fatal cases and the pneumococcus was found in the stools as well as in the lungs. In another fatal case there was found a red pigmenting bacillus of the colon group staining the stools blood red and causing the attending nurse to

report hemorrhage, though microscopic examination revealed no evidence of it. Cook remarks that in some cases of infantile diarrhea a septic condition is probably set up by the entrance into the system, through the bowel lesions, of well-known pathogenic germs like the pneumococcus, and that this specific intoxication may be masked by the symptom of the milder infection.

Nocturnal Movements of the Head in Children.

—This condition which is also known as *jactatio capitis nocturna*, is described by J. ZAPPERT (*Jahrb. f. Kinderheilk.*, July 1, 1905). It is found in young children and consists of rhythmic vigorous motion of the head, occurring during sleep, persisting, with short pauses, throughout the entire night, or a large part of it, returning nightly, unchanged, for many years. A series of six cases is reported by the author who finds in them the following common characteristics: In most of the cases the trouble starts during the third year, and is regularly repeated every night. In the morning the child is ignorant of the movements of its head during the preceding night. The movements are as regular as a clock and consist of a vigorous shaking of the head upon the pillow. The favorite attitude of the child during sleep favors the motions. They are in some cases accompanied by *pavor nocturnus*. It is instructive to note the differences between nocturnal shaking of the head and other forms of motion of this part of the body. From tic it is distinguished by the fact that the latter is developed out of conscious movements, and even in the latter stages consciousness and the will play a part, and that sleep and tic are incompatible. *Spasmus nutans* which occurs in young infants is usually associated with rickets, never exists beyond the fourth year, and ceases during sleep. Moreover, hysteria must be ruled out, for this always accompanies the state of waking. From stereotypic movements, including habit spasm, the nocturnal movement must be distinguished; the former, as defined by the Frenchman, Cahen, are motions belonging to the somatic or vegetative life, which are coordinate, have no convulsive character, but rather give the impression of purposeful practised movements, occurring over a long period, at first conscious and voluntary, and later automatic and involuntary. The stereotypic movements have been studied mainly in the insane, and there are many types of them, of which *katatonnia* is one. The nocturnal motion of the head may be classed among the habit spasms of children, resembling the latter in the similarity of repetition, and the persistence of duration. It is quite possible that in the genesis of the nocturnal movement, this was an accompaniment of going to sleep, similar to the acts of sucking indulged in by many infants on going to sleep, and which are continued during the latter. In differential diagnosis must be excluded the gnashing of teeth, the sudden pulling together of the body, the throwing about, the spasmodic swallowing, nocturnal epilepsy, *pavor nocturnus* and *somnambulism*. In all of these are absent the regular nightly return of the movements, the automaticity and the long duration for years, which are present in the case of the nocturnal shaking of the head.

Measles Following Scarlatina.—Measles may show itself in any stage of scarlatina, according to H. RISZL (*Jahrb. f. Kinderheilk.*, July 1, 1905). In measles following scarlet fever the exanthem has a marked tendency to be atypical. The fever-cure of the secondary measles is not influenced by the preceding scarlatina, and this is true also of the other clinical symptoms, complications and sequelæ. If the defervescence of the scarlatina is coincident with the incubation period of measles,

the former is prolonged. Measles following scarlatina forms a very serious complication, the mortality being 20 per cent.

PATHOLOGY AND BACTERIOLOGY.

Bacteremia in Pulmonary Tuberculosis.—It is commonly supposed that the hectic fever, so characteristic for the later stages of tuberculosis, is due to an invasion of the blood with pyogenic germs, such as the staphylococcus and the streptococcus. Indeed, many reports on blood cultures are to be found in literature which claim positive findings. G. JOCHMANN (*Deutsch. Arch. f. klin. Med.*, Vol. 83, Nos. 5 and 6) has examined the blood of forty cases, but has never been able to grow bacteria of any kind, even where the blood was taken a few hours before death. A number of examinations were also made after death, but in seven cases the heart blood was sterile and in only one, streptococci were obtained. The inference therefore can only be that bacteremia in pulmonary tuberculosis is an exceptional condition, and that the fever is in the great majority of instances due to absorption of toxins.

Bacteria in the Small Intestines.—While the large intestines normally contain a large number of bacteria of all kinds, it is quite exceptional to find the small intestines otherwise than sterile. Thus D. ROLLY and G. LIEBERMEISTER (*Deutsch. Arch. f. klin. Med.*, Vol. 83, Nos. 5 and 6) found only a very small number of germs in the empty small intestines of rabbits. If bacteria are purposely introduced, they will soon be destroyed or carried away by means of peristalsis. The influence of the bile, pancreatic or intestinal juice is only very slight, since these fluids combined possess only a very feeble bactericidal action. The bile acids are also inactive since they very soon unite with the alkali present in the upper parts of the intestines. It seems that the normal intestinal walls are the chief factor which inhibits bacterial growth, while the constant change in reaction, which goes on from the pylorus to Bauhin's valve, probably also plays a prominent part. If the intestinal walls are injured in any way, as by strangulation, bacterial growth is no longer checked.

Influence of Roentgen Rays, etc., on the Blood.

The Roentgen rays seem to have a specific action upon the blood, for the leucocytes rapidly disappear after exposure. In small animals, such as mice, the blood may be found completely free after an exposure of several hours, while with larger animals it is much more difficult to destroy all the cells. The destruction goes on chiefly in the circulating blood itself, for at certain stages many degeneration forms may be encountered. Among the different varieties of white cells, the lymphocytes seem to possess the least resistance. Owing to the breaking down of the white cells, a leucotoxin is formed in the serum both within and without the body. It is an interesting fact that if this leucotoxin is injected into other animals, a decrease of the number of leucocytes may be seen soon after. This leucotoxin may be rendered inactive by heating up to 55° to 60° C.; it passes from the mother to the fetus by way of the placenta, and it will eventually produce an immunity against itself. The cause of death after exposure is only rarely to be ascribed to infection resulting from the dermatitis; in the majority of cases an intense nephritis must be held responsible. The hemoglobin, red blood cells and the blood platelets are only slightly affected by the Roentgen rays. P. LINSER and E. HELSER (*Deutsch. Arch. f. klin. Med.*, Vol. 83, Nos. 5 and 6) have carried on similar experiments with radium and with ultraviolet light, but an effect upon the blood was never detected. It seems that these rays do not possess

the power to penetrate the tissues to the same extent as the Roentgen rays.

Anti-Body Against Tapeworm.—In order to determine if the precipitin reaction may be employed to detect the presence of tapeworms in human beings, J. LANGER (*Münch. med. Woch.*, Aug. 29, 1905) tested the blood of different individuals with an aqueous extract of worms. An appreciable reaction was not, however, obtained in a single instance. It is therefore not very likely that constituents of the worm pass into the blood of the host. The nourishment of parasitic cestodes is probably derived from diffusible proteids in the food of the host. It could not be determined that immune sera possess any value in antihelminthic therapy.

Carcinosis of the Thoracic Duct.—T. SCHWEDENBERG (*Virchow's Archiv*, Vol. 181, No. 2) states that carcinosis of the thoracic duct is found quite commonly with carcinomata of the abdominal organs. There is generally a direct transport of the malignant cells from the primary site into the receptaculum chyli, and from here they are carried into the subclavian vein, and finally reach the lungs, by way of the right heart. The tumor cells may also reach the lungs by retrograde transport through the lymphatics, and often pass through the lungs without forming metastases. It is even likely that a large percentage of the cells, which enter the main circulation, disappear without having given rise to tumors.

Plague in the Philippines.—A number of new facts relating to the plague as it appears upon the Philippines, are communicated by M. HERTZOG (Bureau of Govern. Lab., No. 23). He states that the importance of properly diagnosing the first case of plague cannot be overestimated. The disease does not make its first appearance as a widespread epidemic, as is often the case with Asiatic cholera, when caused by a contaminated water supply or from other sources of infection. Instead, it begins very insidiously from one or several imported cases. It is frequently easy to hold the plague in check, provided it is recognized and properly fought at an early stage. In studying the histopathology of plague, a highly interesting change was found in the kidneys, namely, extensive and frequently occurring hyaline, fibrin thrombosis of the glomerular capillaries. The histological examinations, in their entirety, have led to the conclusion that plague in its most common bubonic type should not be looked upon as a hemorrhagic septicemia, because, according to all appearances, the infecting bacilli remain practically localized until the agonal stage of the disease is reached. One case suggested the possibility, if not the probability, of an infection through the agency of pediculi. It was also found that the rodents in the neighborhood of Manila were infested by a species of *Siphonoptera* not heretofore described. This new species of flea probably does not, however, take any part in the conveyance of the disease. Important points in making a diagnosis of plague at autopsy are the following: The bubo is generally present in the femoral, axillary or cervical regions. The surface of the body is often cyanotic, and hemorrhagic skin eruptions may be present. A dark, blood-tinged, foamy fluid may ooze from the nostrils. The dissection shows multiple subserous and submucous hemorrhages, general congestion, splenic tumor, parenchymatous degeneration of the kidneys and often pneumonic consolidation. Smears and cultures should be made from the buboes and the blood, and pieces of tissue should be fixed in Zenker's fluid for microscopical examination. Finally, animals must be inoculated. After twenty-four hours, a bacteriological diagnosis is generally possible.

Freezing Points of Blood and Urine in Pneumonia.

—F. E. SCHMIDT (*Journal A. M. A.*, September 23), after first reviewing the literature of cryoscopy in medicine, and especially in pneumonia, describes his methods and precautions for thus testing blood and urine, and gives tabulated details of observations in twenty-four cases of pneumonia, in males between the ages of eighteen and fifty years, and all apparently in good health before the attack. The tests were made daily, the patients being given essentially the same diet of milk, and later broths and plenty of water, and kept under the regular stimulating treatment. A few had salt irrigations. The freezing points of the blood and urine, the quantity and specific gravity of the urine and the amount of urea were recorded, and albumin and casts noted when present. He finds that there is an absolute lowering of the freezing point of the blood in pneumonia depending in some way either on the extent of consolidation of the lung or on the height of the temperature, or both. This lowering is more than can be accounted for by the increased viscosity of the blood from deficient aeration. The concentration of the blood increases, as shown by the lowered freezing point, as the disease progresses, up to the time of crisis. Some time is needed for the elimination of the excessive accumulation of products in the blood, hence several days elapse before the freezing point rises again to normal. In cases in which the heart perceptibly weakens the freezing point becomes still lower, and in fatal cases when the heart gives out, the freezing point of the blood is extremely low. The lowered freezing point of the blood is apparently not due to deficient kidney function, but may be due to the inability of the kidney to excrete the excessive products of metabolism. The freezing point of urine in pneumonia is considerably lowered, more than would be accounted for by a mere concentration of normal urine. The chlorids excreted are diminished, on account of a lesser amount taken in (Sollmann). The quantity of the urine is decreased while the freezing point is lower, and this lowering is not due to chlorids but to metabolic molecules excreted. The freezing point of the urine does not rise to normal until after that of the blood; that is, several days after the crisis. The specific gravity of the urine is no accurate index of its degree of concentration. The freezing point of the urine bears no constant relation to that of the blood normally, for with a freezing point of blood at -0.54° C. the freezing point of the urine may be normally lower than in a case in which the freezing point of the blood is -0.57° C., or vice versa.

Saccharin.—S. A. MATHEWS and H. MCGUIGAN (*Journal A. M. A.*, September 16) have studied the effect of saccharin on oxidation and digestion. Their methods and experiments are described in detail. They find that it has marked retarding action on oxidation in the blood and muscles and also on the action of the digestive juices, especially those of the salivary glands and pancreas. Its prolonged use, therefore, is likely to produce digestive disorders. When injected into the circulation of an animal, it produces depression and stupor, followed by labored respiration, similar to asphyxia. This is evidently due to its inhibitory action on the enzymes of the blood and tissues, and also probably accounts for the headaches and other symptoms it produces. It may be considered a general protoplasmic poison, in that it inhibits nearly all the fermentative processes of the body, thus interfering with metabolism.

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THE PUBLIC HEALTH AND MARINE HOSPITAL SERVICE AND THE TREASURY DEPARTMENT.

It is a pity that in these strenuous days of the "Keep Commission" and the general investigation of the financial affairs of all the departments of the United States Government, in Washington, that even a shadow of a question should have been raised as to the management of the Public Health and Marine Hospital Service.

For that this service has done good and faithful work there can be no question. That it has gained both the confidence of the general public and the respect of the medical profession is beyond doubt or cavil, so that just now, when the eyes of the world have been turned to it and its thorough and competent handling of the very difficult problem at New Orleans of the yellow-fever epidemic, it seems doubly hard that what at the best, or the worst, seems to be nothing more than a few mistakes in business management should be heralded to the world through the medium of the daily press with almost as little consideration as if it had been either tainted with "graft," or weighed down by incompetency.

For in the first place physicians are not "business men," for the very qualities that insure success in the practice of medicine militate against it in the commercial world, and by nature and

training doctors are unsuited to cope with the intricacies of modern frenzied finance as any body or profession of men can possibly be. On the other hand, while two wrongs do not make a right, yet the force of a bad example becomes a mighty lever when it enters into almost every branch of the government service and heeds a carelessness of expenditure that gradually increases until it is, for the time, checked by a wave of reform, such as is now sweeping the executive departments with all the proverbial cleanliness of the new broom.

That it may not be within the jurisdiction of the Marine Hospital Service, without the sanction of Congress, to send two of its officers to a foreign country, with pay, mileage and other expenses allowed, to study the nature and latest treatment of any particular disease, may be true. If so, the proper authorities have the power to hold out the restraining hand, as was recently done, and that ends it, without the necessity for any further comment, but when we remember that a very much larger party has just returned from an "inspection" and study of Philippine affairs, it strikes us that the amount of benefit received, as compared with the sum of the public funds expended would have been very much greater in the one case than it will prove in the other.

For when the head of a department sees his confrères sending delegations to wander to and fro over the face of our newly acquired earth, and when we remember that every congressional corpse that is sent back to its native heath is invariably escorted by a guard of honor, to whom are furnished not only tickets and food, but cigars, liquors and "groceries" of the typical legislative type, he becomes so injured to the lavish expenditure of public funds that the enormity of detailing two surgeons to study foreign diseases does not become apparent to him until he is rapped over his official knuckles by the overruling and countermanding of his orders.

As to the criticism of official carelessness in keeping sufficient check on the disbursing officer, it was simply a question of overconfidence in a trusted employee. This has happened before, even in business circles, and will undoubtedly occur again. This particular clerk has been in the service for many years; had gained the confidence of his superiors, and from the evidence produced at his trial, seems to have been possessed of even more than the coolness that is generally associated with successful crime. Thus, on

his detection, which was brought about by his absence through sickness, he merely remarked, "I was up against it, I needed the money and I took it; that is all there is to it." Now, when a man is cool enough to accept detection in this manner, and when he is sufficiently skillful in his methods to have deceived the officials of the United States Treasury, from whom he obtained the money, it does seem unjust to hold a physician to account.

As will be seen, these charges so far are not enterprises of great pith and moment, and to this category may be added that of the purchase of hospital supplies and stores. As is well known, these have been of most excellent quality and have been bought at most reasonable rates; in fact, for this reason the Panama Canal Commission employed them as a purchasing agency.

There may have been at times the adoption of a worthless invention that could not be judged of until the experiment was made. The proof of a pudding is in the eating, and if a lamp would not hold out to burn until even the inventor could return, there is nothing to do but to abandon it. It was surely not the fault of the service that it was the flame and not the sun that went down when they trimmed the lamp, and the United States does not possess an Aladdin that will exchange new lamps for old ones. The use of formaldehyde, too, has been superseded by other fumigants, and the employment of the autoclave.

All this, as we have said, is inconsequent, not to say puerile, but if the Marine Hospital Service has been sustaining more hospitals than are required; if they have been conducting them with such careless methods of expenditure that the expense of the patients exceeds the sum of three or four dollars a day per capita, if they exceeded the congressional appropriation for their new building, then they have committed a grievous fault and grievously have they answered it. For it has been decided by the Treasury Department, under the jurisdiction of which the Marine Hospital Service is placed, not only to close many of the already existing hospitals, but also to abandon all work on the new building now under process of construction.

Now, this will be, it is needless to say, a severe blow to the Public Health and Marine Hospital Service, and the loss of the new building may, and probably will, cripple the field of its usefulness, but the hard and unjust part is that the present condition of affairs is not the result of direct

charges, which might have been met and refuted, but is the expression of the implied opinion of the Treasury officials who made the investigation, the only promulgation of the finding of which has been these harsh and drastic orders.

A GLEAM OF HOPE IN CANCER.

IN recent years, owing to the failure, after the raising of many hopes, to find the causative agent in cancer, there has been a distinct tendency toward pessimism in the consideration of malignant disease. The disappointment with regard to the ultimate effect on patients treated by the X-rays and other radio-active agents has added to this darker aspect of the question. The result has been a period of discouragement.

It is all the more interesting then to find in the discussions of the subject at the New York State Medical Association, last week, an abstract of which will be found in the society proceedings of this and next week's *MEDICAL NEWS* that a more hopeful view of the cancer problem is opening up. This comes not only in a distinct recognition of the gradual improvement of surgical statistics, which is quite remarkable, but also in the biological aspects of cancer.

In cancer of the breast nearly one-half the cases operated upon now live beyond the three-year limit. As at least one-fourth of all the cases operated upon are considered hopeless by the operator, but are given the benefit of the doubt, it is indeed encouraging to note how many genuinely successful operations are performed.

It is especially from the study of cancer in animals that more hope of an ultimate solution of the awful problem of cancer is now derived. It is not generally known, even to the medical profession, that a great many of the smaller animals suffer from true cancer, but careful investigation in the laboratory has now put this beyond doubt. As a consequence, there is scarcely a breeder of small animals in the country who has not posted up the notice sent out by various cancer investigators that special rewards, as high as \$25, will be paid for animals that have tumors. Almost needless to say one result of this is that many opportunities for the study of malignant tumors in animals are being provided, and the knowledge of cancer is advancing apparently with more rapidity than ever before in medical history. In the very small animals particularly, such as mice, the history of cancer is so condensed that its study is much more fruitful and satisfactory than would be even the most careful clinical ob-

servations made upon the corresponding features of cancer in human beings.

Those who still may harbor doubts as to the benefits to be derived from vivisection, or, as it should properly be called, the study of animals, in order to add to our knowledge of the physiology and the pathology of human beings, should read these recent chapters in medical science, with regard to observations on tumors, and be convinced of how much good can be done. Whatever of benefit accrues is to redound as equally to the animals themselves as to man.

In mice the spontaneous cure of cancer occurs not infrequently and serves to demonstrate that there is in these animals a distinct resistance to the spread of the disease. This may, however, be overcome with fatal issue. Anything that will embarrass the growth of the tumor at the beginning of its career is almost sure to bring about its disappearance. It would seem that the animal has a certain amount of immunity to cancer, but that the rapid growth of the neoplasm and the absorption into the system of the toxic secretions of epithelial cells paralyzes this important function of the animal's blood serum. If the tumor be pricked with the needle in a number of places with the production of hemorrhages, especially along its advancing edges, then it will usually disappear. Always provided, however, that it has not reached a certain limited size, beyond which the animal's immunity seems unable to cope with it. After this the irritation of the tumor causes it to grow more rapidly than before, rather than hinder its growth.

As is well known, the spontaneous cure of cancer in human beings is not rare. A number of cases were reported at this meeting, and it is not an unusual experience to find that recurrent carcinoma particularly may be spontaneously conquered by the natural resistance of the tissues. In mice, the animals which have had a cancer and have recovered from it are more strongly resistant to further invasion of the disease, so that their serum seems to acquire additional immunity. The possible preparation of a curative serum for cancer then does not seem entirely out of the question, but, on the contrary, appears to be a near step in progress. In the meantime the interesting fact that by experimental methods cancer may be studied in its most intimate workings, represents an advance greater than any hitherto made in our history of cancer progress, and we sincerely hope that the bright promise it seems to hold out will be fulfilled.

ECHOES AND NEWS.

NEW YORK.

West End Medical Society.—The sixth regular meeting of this society will be held Saturday evening, October 28, at the residence of Dr. James E. Newcomb. The paper of the evening will be read by Dr. Douglas H. Stewart on "Thoughts on the Last Month of Pregnancy."

Anniversary Meeting at the Academy.—The Officers and Fellows of the New York Academy of Medicine request the presence of the members of the Academy at the anniversary meeting and reception, Thursday evening, November 2, at 8:30 o'clock. The anniversary discourse will be delivered by Professor Arpad G. Gerster, M.D., on "The American System of Hospital Economy," in Hosack Hall, 17 West Forty-third Street. Reception at 9:30 o'clock.

Sydenham Hospital.—At the last meeting of the Board of Directors of the Sydenham Hospital Mr. Wm. I. Spiegelberg announced the following donations: Meyer Guggenheim Sons presented \$5,000 to endow a bed in memory of their late father. Mr. Isaac Guggenheim personally presented \$2,800, and in addition through the efforts of Mrs. Isaac Guggenheim, \$700 were given to the maternity division. Mr. Samuel Lee Schubert donated the use of the Lyric Theater, with eminent artists, for a benefit performance November 26, 1905.

The Medical Society of the County of New York.—At the last regular meeting, held October 23, 1903, which was the one hundredth anniversary of this society, the following program was given: Report of the Treasurer, Dr. Charles H. Richardson; Report of the Board of Censors, Dr. H. Seymour Haughton, Secretary; Report of the Committee on Audit, Dr. John C. Minor, Chairman; Report of the Committee on Discipline, Dr. Charles P. Munn, Chairman; Report of the Comitia Minora, Dr. J. Milton Mabbott, Assistant Secretary; Report of the Editor of the Directory, Dr. Edmund Prince Fowler; Report of the Milk Commission, Dr. Rowland W. Freeman; Report of the Counsel of the Society, Mr. Champe S. Andrews; Origin and Early History of the Medical Society of the County of New York, Dr. John Van Doren Young; Some of Our Predecessors, Dr. A. Jacobi; Objects to be Attained by Our Society in the Twentieth Century, Dr. Edward D. Fisher.

A Great Undertaking.—Those who have not had experience with promoting large charitable affairs can have no conception of the tremendous amount of labor connected therewith, but those who know a little about it will appreciate the colossal task which the Committee for St. Cecile Lodge has before it in promoting the monster concert for the benefit of the Masonic Sanatorium for Consumptives, to be held at Carnegie Hall, Sunday afternoon, October 29. It is probably strictly within the lines of truth when we say that never before in the history of Masonry in this country has any single lodge attempted such a gigantic task as in this instance; but it is becoming an adage that "Whenever St. Cecile sets out to do anything, she does it." After weeks of labor, the committee is at last able to announce that it will "make good" its promises, and even better. The sale of seats and boxes is progressing rapidly, and the committee thinks it highly probable that before another ten days have passed the entire house will be sold out. It is, therefore, advisable for those who desire to have good seats for the concert to order them at once. One of the

most noteworthy features of the concert will be the appearance of Mme. Lillian Blauvelt, the world-renowned soprano. This will be her farewell appearance on the concert stage, or for at least three years, as she is under contract to sing in opera for that period. Another eminent soloist will be Gwilym Miles, one of the most noted barytones in this country, who has just returned from an eighteen months' stay in Germany, where he created quite a furore at his appearance in the different large concerts and oratorios there. Mr. Miles is a member of Benevolent Lodge in this city. This will be his first appearance in this country after two years. The grand orchestra, composed of 125 of the very best orchestral artists in the City of New York, will be under the direction of America's most famous conductors—Victor Herbert, Walter Damrosch, John Philip Sousa and Nahan Franko. The great bandmaster Sousa wired the committee from Kansas City that he was only too happy to assist the great cause, and those who admire his marches will have the pleasure of listening to his most famous one, played by this grand orchestra and conducted by himself. Sousa, by the way, is a Mason. Victor Herbert is probably the best-known composer of the higher class of light music in the world, and as an orchestral conductor is unexcelled anywhere, having conducted some of the greatest orchestras, his own as well as the Philharmonic and others. Walter Damrosch is one of the greatest symphony and classical conductors of the times, and to music lovers all over the country he needs no introduction, having conducted his own symphony orchestra in all of the large cities, and for many seasons toured the United States with his great German Opera Company. Nahan Franko, of King Solomon's Lodge, one of the conductors of the Metropolitan Opera House, is a conductor of whom Americans can be proud, as an American product. He has won international fame, not only as a violinist, but as a grand opera and concert conductor. Twenty-seven of the operas produced at the Metropolitan last season were conducted by him with great success. The committee is proud of its success in securing him. A grand chorus, comprised of 300 picked voices from the Brooklyn Oratorio Society and the best church choirs in this city, under the direction of the well-known choral conductor Walter Henry Hall. There is no choral conductor in this country who knows better how to train voices and how to rehearse and conduct a mammoth chorus better than Hall, who has become justly famous in his particular forte. Mr. Hall, by the way, is a member of Baltic Lodge, Brooklyn, and, though it means considerable work for him, he was very pleased indeed to show the true Masonic spirit, and volunteered to gather together the great chorus and rehearse and conduct it.

PHILADELPHIA.

Officers Elected by State Nurses.—At the third annual meeting of the Pennsylvania State Nurses' Association officers were elected for the ensuing year. Miss Margaret Whittaker, of Philadelphia, was elected President; Miss Mary Wier, of Pittsburg, Vice-President; Miss Mollie Mallory, of Philadelphia, Second Vice-President; Mrs. Lottie Lewis, Braddock, Secretary; William McNaughton, of Pittsburg, Treasurer. The following were elected Directors: Mrs. Hattie Cochran, of New Castle; Misses Anna Brobson, of Philadelphia, Emily Gamewell, of Scranton, and Helen Hunt, of Pittsburg.

Bequests.—Charles J. Gallagher, a wealthy distiller, who recently died at 922 North Broad Street, left \$5,000 each to St. Joseph's Orphan Asylum, to House of the Good Shepherd, to Little Sisters of the Poor, and to the Philadelphia Protectory for Boys. David Teller, a retired tobacco merchant, who recently died at 903 North Eighth Street, bequeathed \$250 to the Jewish Hospital and \$250 to the Jewish Foster Home and Orphan Asylum. Susan C. Whelan, upon her death, gave to the Maternity Hospital \$500, and to the Catholic Protectory for Boys an equal amount. The will of John Joseph Alter bequeathes \$50,000 each to Hahnemann and to Jefferson Hospitals. This money is for the purpose of erecting a "John Joseph Alter" memorial in each institution; each hospital received an additional \$10,000 to endow two beds. The Board of Trustees of each institution shall decide upon the character of memorial most suitable. The University of Pennsylvania Hospital received \$10,000 to establish two beds. The will of Mrs. Frances E. Loeb, who recently died in Cheltenham Township, leaves \$500 each to the Jewish Hospital, at Tabor, and the Jewish Maternity Home. The Presbyterian Hospital will receive, according to the will of Emma C. Tildmann, a bequest of \$7,800.

Changes in the Department of Public Health and Charities.—The first move in this department was the resignation of George W. Sunderland, Assistant Director of the Department of Public Health and Charities. This step was no surprise to the citizens of Philadelphia, especially after the recent exposures. It was said that the office was abandoned because of Mr. Sunderland's health. The public is somewhat loath to accept this statement in its entirety. Mr. Harry Mackey was elected Assistant Director of the Department of Public Health and Charities, the position just vacated by Mr. Sunderland. The first step of the new Director was to institute an "anti-graft" crusade, especially upon the House Drainage Department in the Bureau of Health. As a result of this crusade Frank Runkle, clerk in the registration division of the Bureau of Health, was requested to resign; Gilbert Stackhouse, a nuisance inspector, met the same fate, and Charles Polk was dismissed from the department, where he held a position because of his ability to control votes in a division of the Eighth Ward. The resignation of Director Martin had been hinted at early in the summer and again when the Assistant Director made his exit, but it was not known to the public until Monday, October 23, that Dr. Martin had tendered his resignation to the Mayor the preceding Saturday. The letter was short and rather characteristic of Dr. Martin. He told the Mayor "times are too strenuous for his peasant soul."

Dr. Dixon Talks to Women's Clubs.—After the "Pennsylvania State Federation of Women's Clubs" finished with the election of officers they listened to an address made by Dr. Samuel G. Dixon, Commissioner of Health. He spoke of the aid women can be in the prevention of disease, and then told them of the most important work now occupying the time of the Department of Health. Ignorance of the scourge smallpox would be, if it were not held in check by the almost universal practice of vaccination throughout the civilized countries, he believes, is the only means by which the antagonism to the performance of vaccination can be accounted for. The carelessness to carry out this comparatively simple procedure is so extensive that the State must institute laws making the procedure compulsory. He pointed out that among the anti-vaccinationists are also supposedly intelligent

people. Dr. Dixon also noted that none the less important than the universal vaccination is the boiling of the drinking water to avoid such infections as typhoid fever and other diseases. He requests that they as household overseers personally attend to the matter of boiling the water to be used for domestic purposes. He then spoke of the treatment of diphtheria and of the rewards of Behring. The clubs were informed that the public will now be supplied free of charge the antitoxin. He holds women as co-workers in the line of sanitation, and notes that the cultivated classes of America are the counterpart of the nobility across the Atlantic, but he believes that the women of this country exert a greater influence and that the influence carries with it responsibilities as real and as exacting as those of the nobility.

CHICAGO.

Degree Conferred on Dr. Murphy.—The degree of Doctor of Science was recently conferred on Dr. John B. Murphy, of Chicago, by the University of Illinois.

Address by Professor von Noorden.—Professor C. von Noorden, a distinguished foreign physician, recently addressed the members of the Chicago Medical Society on the subject of "The Pathologic Chemistry and Treatment of Gout." He will be the guest of this society during his stay in Chicago.

Chicago Surgical Society.—At the annual dinner of this society, held October 13, the following officers were elected: President, Dr. D. A. K. Steele; Vice-President, Dr. D. W. Graham; Secretary, Dr. William Hessert; Treasurer, Dr. Frederic A. Besley; Members of the Council, Secretary, Treasurer, Dr. L. L. McArthur, Dr. E. Wyllys Andrews and Dr. A. J. Ochsner.

Chicago Gynecological Society.—The twenty-seventh annual dinner of this society was held at the Auditorium Annex, October 20, and was attended by 100 physicians. The guests of honor were Drs. Hunter Robb, Cleveland, Ohio; Frank Billings and Henry S. Tucker, Chicago, and Matthew D. Mann, of Buffalo, N. Y. At the election of officers, held before the annual dinner, the following were chosen: President, Dr. Frank T. Andrews; Vice-Presidents, Dr. J. B. De Lee and Chas. E. Paddock; Secretary, Dr. Henry F. Lewis; Treasurer, Dr. Chas. B. Reed; Pathologist, Dr. Gustav Kolischer; Editor, Dr. Rudolph W. Holmes; Councillor, Dr. Franklin H. Martin. The dinner was followed by informal talks by the guests and members.

Condemnation of Meat.—Four city meat inspectors on duty at the Union Stock Yards during the week condemned and supervised the tanking of 131,954 pounds of meat, including 115 cattle, 438 hogs, 29 sheep, 6 calves 36 quarters of beef and 5,576 pounds of dressed meats, sour hams, bacon, etc. This is an increase of 46,053 pounds, or more than 53 per cent, over the amount condemned by three inspectors the week previous. Eighty per cent. of the condemnations were for tuberculosis. Three tuberculous cattle, two "downers" and 7,901 pounds of meats, overlooked by the Government inspectors, were condemned by the city inspectors. The carcasses of seven tuberculous cattle, with the evidence of the disease cut away, were condemned by the city inspectors, in the coolers, after having passed the Government inspectors.

Infectious Diseases.—Chief Medical Inspector, Dr. Heman Spalding delivered by invitation a timely address on the infectious and contagious diseases last Thursday evening, the 19th inst., before one of the local medical societies. Concerning pneumonia, which is again disputing with consumption for the captaincy of the men of death, Dr. Spalding cited

statistics of the United States Census Bureau and of the Chicago Register's office, showing that one-tenth of all deaths in the United States is chargeable to pneumonia, and that in Chicago from 1900 to 1905 more than one-eighth of all the victims of disease died from its effects, the death rate being greater by one-third than from consumption and 85 per cent. more than from all other acute contagious and infectious diseases combined, including diphtheria, measles, smallpox, typhoid fever, whooping-cough, influenza and scarlet fever. In Chicago during the five years there were 8,353 deaths from these diseases, compared with 15,327 from pneumonia. "To escape pneumonia," the lecturer said, "is primarily a question of right living. The presence of the germ is not enough to produce pneumonia. There must be a deviation from the normal standard of health, which depends almost entirely upon the manner of living. We may not be able to avoid the access of the germs which produce pneumonia, but we can in a large measure live so as to rob them of the opportunity to become fatally active."

Briefly summarized Dr. Spalding urged the following evils to be avoided and precautions to be taken to keep the vital resistance of the body up to the normal standard: Drunkenness; foremost among all the habits of mankind that aid in the propagation of the disease. Congested mucous membranes offer ideal soil for the germ. Overeating; disturbs digestion, interferes with circulation. Failure to keep mouth and teeth clean; convenient lodging places for the ever present germ are afforded. Overheated houses; make persons too susceptible to outdoor cold; light clothing, including underwear, should be worn indoors. Breathing through the mouth; bad for many reasons. Frequent baths will keep the skin active and free from effete material.

Civil Service Examination for Members of the Cook County Staff.—The cooperation and good-will of the medical profession are solicited for the permanent establishment of the merit system in the choosing of attending physicians for the County Hospital of Cook County. This system, administered under the supervision of the Civil Service Commission, guided and assisted by the consulting staff, probably insures fairer and better results than can be attained by any other method in a community living under our form of government. The Civil Service Commissioners of Cook County have requested the consulting staff of the hospital to act in the capacity of an examining board, with the privilege of adding to their number such experts as in their opinion would be best qualified to examine in the different specialties. The resolution of the County Board under which the Commission is to act specifies departments of the staff, the candidates for which are to be examined by subcommittees from the examining board. Special examining boards are appointed on the following subjects: Surgery; orthopedic surgery; skin and venereal diseases; diseases of the eye; pathology; X-ray; medicine; children's and contagious diseases; nervous diseases; diseases of the ear, nose and throat; pathologic chemistry; obstetrics and gynecology.

The Board of County Commissioners, in their appointments recognize three schools of medicine, the regular, the homeopathic and the eclectic; but in the conduct of the examination the Civil Service Board is not allowed, under the law, to discriminate, and all candidates must be subjected to the same examination by identical examiners. To obviate any difficulty concerning this matter the examining board passed the

following resolutions: (1) That the subject of medicinal therapeutics be excluded from the examination. (2) That at least one homeopathic and one eclectic member of the examining board be made members of the subcommittee on surgery, obstetrics, eye, ear, nose and throat; children's and contagious diseases, which are the departments in which they are represented on the present hospital staff. The following general provisions, covering all examinations to be held, were also adopted: That only such questions shall be submitted in each department as have a direct bearing on the clinical management; that a chronological statement of education, experience, position and past work, tending to qualify the applicant, will be requested; that a majority of the departmental examiners must pass on all examinations, and that no written examination shall extend longer than two and a half hours.

Another matter on which an explanation would seem advisable relates to the action of the President of the County Board in requesting the members of the present staff to enter for examination. Mr. Brundage, who is extremely interested in hospital affairs, and who generously followed the advice of the consulting staff in the present appointments, recognizes that the term of six years, for which he appointed these members, may not prove acceptable to any future board of commissioners, and as he desires definite permanency in these positions he would like an opportunity to reappoint as many members of the present staff as possible under the Civil Service law. He will reappoint as rapidly as possible all members who pass the examination. These appointments, however, must be made in the order of the standing of eligibles on the Civil Service lists. As only an average of 70 out of 100 is necessary to pass, the President is confident that his suggestion that the examination be taken cannot prove a hardship. The present members of the staff may retain their positions as "holdovers," subject to the favor of the county administration, but all vacancies must be filled from an eligible list. Appointees from these lists will hold their positions for six years from the date of their appointment under Civil Service, and cannot be removed within that period except for cause. The series of examinations began October 23 at the Cook County Hospital, and will continue from date to date, as fixed, until completed.

GENERAL.

Flies and Cholera.—Prof. Chantemesse, member of the Pasteur Institute, lecturing at the Academy of Medicine last week, said his experiments had proved that flies were the greatest disseminators of cholera in the towns.

A Dental School of Exceptional Advantages.—The dental department of the Medico-Chirurgical College of Philadelphia permit the students in dentistry to enjoy all the privileges of the students of the medical school, a privilege which is rarely accorded students of dental colleges. A system of quizzes is conducted free of charge which is a material advantage to the students. An abundance of material for practical work in the dental infirmary is supplied each individual. Each student is given the widest latitude and the greatest incentive for individual work, which has resulted in some of the greatest achievements by undergraduates in the dental profession.

Information Wanted.—The psychophysiology of anesthesia is a productive subject greatly in need of adequate investigation and discussion. Both pure science and practical surgery have doubtless much to gain from a deeper-going study of experiences under

ether, chloroform, nitrous oxide, etc., than has as yet been made. Scientific literature has frequently contained accounts of isolated individual experiences reported most often because of their strangeness. A very large number of descriptions of the ordinary experiences is what is now desired, and to this end blanks have been prepared on which replies to certain simple questions may be written. All persons, and especially hospital surgeons, officers of medical societies, and instructors in medical schools, are respectfully requested to send to the undersigned for as many of these blanks as they care to distribute among persons who have been under an anesthetic. These will be gratefully sent, and received when filled out.—George V. N. Dearborn, M.D., Department of Physiology, Tufts College, Medical and Dental Schools, Boston, Mass.

Civil Service for Male Physician in the Indian Service.—The United States Civil Service Commission announces an examination on November 22, 1905, to secure eligibles from which to make certification to fill a vacancy in the position of physician (male), at \$1,000 per annum, San Juan, Indian Agency, N. Mex.; another, at \$900 per annum, at Fort Bidwell, Cal., and similar vacancies as they may occur in the Indian Service. As the Commission has experienced considerable difficulty in securing eligibles for this position, but five having been secured as the result of the examination held on September 13, 1905, qualified persons are urged to enter this examination. The examination will consist of the subjects mentioned below, weighted as indicated: (1) Letter-writing (the subject-matter on a topic relative to the practice of medicine), 5; (2) anatomy and physiology (general questions on anatomy and physiology, and histologic or minute anatomy), 15; (3) chemistry, materia medica, and therapeutics (elementary questions in inorganic and organic chemistry; the physiologic action and therapeutic uses and doses of drugs), 10; (4) surgery and surgical pathology (general surgery, surgical diagnosis; the pathology of surgical diseases), 20; (5) general pathology and practice (the symptomatology, etiology, diagnosis, pathology, and treatment of disease), 25; (6) bacteriology and hygiene (bacteriologic methods, especially those relating to diagnosis; the application of hygienic methods in prophylaxis and treatment), 10; (7) obstetrics and gynecology (the general practice of obstetrics; diseases of women, their pathology, diagnosis, symptoms, and treatment, medical and surgical), 15; total, 100. Seven hours will be allowed for this examination. Age limit, twenty-five to fifty-five years on the date of the examination. This examination is open to all male citizens of the United States who comply with the requirements. Applicants should at once apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners at any place mentioned in the accompanying list, for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application. As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will, therefore, arrange to examine any applicant whose application is re-

ceived in time to permit the shipment of the necessary papers.

OBITUARY.

Dr. ANNA C. REES, a well-known North Hudson physician, died last Wednesday at her home, 121 Palisade Avenue, Union Hill. She was born in Wales twenty-nine years ago, and had practised medicine nine years.

Dr. LOWELL HOLBROOK, the oldest practising physician in Connecticut, died last week at his residence in Thompson, Conn., after a long illness. He was eighty-seven years old, and had been in practice sixty-three years. He was Surgeon of the Eighth Connecticut Volunteer Infantry in the Civil War.

Dr. J. HOWARD TAYLOR, a specialist on nervous diseases, died at his home in Philadelphia last week of senile debility, aged eighty years. He fell on the sidewalk several weeks ago and never fully recovered from the shock. Dr. Taylor graduated from the University of Pennsylvania in 1852, and had been identified with the Bureau of Health for half a century, and was at one time the Chief Medical Inspector. He was a brother of Bayard Taylor, the poet and traveler, and was prominent in Masonry, having been a Past Master of Lodge No. 51.

CORRESPONDENCE.

"THAT UNPLEASANT CUSTOM."

To the Editor of THE MEDICAL NEWS:

DEAR SIR: In such iconoclastic terms, so we are informed by the public press, does "one learned physician" refer to the time-honored and soul-satisfying osculatory practice known as "kissing." The sanitary Solons of all nations, recently in convention assembled in "gay Paree," have solemnly placed the ban of official disapproval upon the habit of labial juxtaposition which has hitherto been regarded as "a picnic for two," even from the period of our common Edenic ancestors down to the present time. Thus, one by one, are we successively deprived of our cherished privileges, at the behest of the ruthless bacteriological Alexander who is ever seeking for new bacillary worlds to conquer. First we were warned of the danger to health and life from the handling of filthy lucre; next, that the luscious bivalve, yclept the oyster, when gently and sinuously tobogganed between the pillars of the fauces and adown the esophagus into the safe and capacious haven of our gastric viscus, is liable to carry along, as fellow passengers, countless myriads of Eberth's bacilli. Then came the disturbing information that the congealed H₂O, with which we were wont to cool our festive Martini or our gay and gregarious sherry cobbler, is often a veritable hotbed of pathogenic bacterial life (think, for a moment, of ice as a "hotbed"), and the dictum went forth, "Boil your ice!" Now, who ever heard of a decent cocktail made with boiled ice? Next to receive scientific condemnation was "my lady Nicotine," in the shape of the cigar with which we have been accustomed to solace our overworked neurones and to woo the goddess of rest and contentment, and, forsooth, because a colony or two of the *Bacillus Kochii* may have been transferred thereto from the lips of a phthisical cigar-maker. In view of these cruel curtailments of our inalienable privileges and pleasure, at the demand of modern science and because of the final crushing blow that robs us of the soul-inspiring privilege of osculatory exercise, is it not high time to inquire, "Where will it all end?" and "Is life worth living." We pause for a reply.

Very truly yours,

F. S. H.

A CORRECTION.

To the Editor of the MEDICAL NEWS:

DEAR SIR: Permit me to make a correction in your issue of September 9, in the report of my remarks at the Medical Society of the County of New York.

You quote me as saying that the proteids, etc., of cow's milk are not of the same chemical constitution as in human milk. What I did say is that it has been so claimed, and that I supposed it to be the fact; but I went on to say that, notwithstanding such differences, they probably resemble each other more closely than either resembles anything else at our command, and that it was in making use of such resemblances that most of the advance of the last fifty years has been made in this line of work.

Again, you quote me as saying that when milk is not boiled, cereals may be used, etc. I said absolutely nothing about boiled milk, and the whole argument was that, except in older children, cereals ought not to be used as food, because, although many babies can digest them, more cannot, and there is no way of distinguishing which until harm is done.

Of course these are mere slips in writing out the stenographer's notes, but as they put me in the light of advocating what I have long opposed, I should be glad to learn that you will make correction at an early date. I think it probable that a proof was sent me, but if so, it has never been received. Kindly acknowledge the receipt of this note.

Yours very truly,

EDWARD M. BUCKINGHAM.

Boston, Oct. 22, 1905.

SPECIAL ARTICLE.

THE HERTER LECTURES ON DIABETES.¹

BY PROF. CARL VON NOORDEN,

PHYSICIAN-IN-CHIEF TO THE CITY HOSPITAL, FRANKFORT-A-MAIN, GERMANY.

THIRD LECTURE—OCTOBER 11, 1905.

(Continued from Page 798.)

In diabetes the utilization of the carbohydrates is abnormally diminished; the cells allow the sugar of the blood to pass by unmolested. Is there besides this decreased utilization an increased formation of sugar? This question is an old one. The overproduction of sugar was the first to be considered as the cause of hyperglycemia and glycosuria. This is an important question, involving many problems in the domain of physiological chemistry. The overproduction of sugar occurs when substances not normally sugar-formers become such. Is this overproduction primary or is it secondary to the disturbances of metabolism that occur in diabetes? One explanation is that the overproduction is secondary to the demand made by the tissues. Normally these utilize the carbohydrates for work and heat. The forms used are glycogen, which is obtained from the cells where it is stored up, and sugar, which is obtained from the blood in steady flow. The latter is replaced in the blood as rapidly as it is removed, being supplied by the liver as rapidly as it is needed. If by hard work or exercise the glycogen store of the liver is exhausted, the proportion of sugar in the blood

¹ Abstract of Course of Lectures on Diabetes Mellitus.

² Delivered before the University and Bellevue Hospital Medical College, New York.

remains the same as before. There must therefore be other sources of sugar besides glycogen. These are probably fat and proteid. Whether or not the liver receives its signal for the conversion of glycogen into sugar, as the latter is needed, through the nervous system is not yet decided. There is a tendency nowadays to consider this regulation as a chemical one. It may be that the sugar content of the inflowing blood gives the regulating signal. In diabetes the tissues get hungry for sugar because they are unable to get it. From them the liver possibly gets the signals for the further mobilization of sugar. In the healthy the mobilized sugar steps out into the breach where it is used up. In diabetes the reserves are called out in vain; they cannot reach the place where they are needed, and they are uselessly squandered. The more the tissues hunger for sugar the more is the formation of sugar by the liver effected. In this way there is recklessly used up the material which in the healthy body is reserved for future need.

As regards the sources of sugar, the cells prefer the sugar obtained from the intestine to all other kinds. That is shown by the fact that the respiratory quotient rises one-quarter of an hour after the ingestion of carbohydrates, and continues as long as the latter remain in the diet. In most individuals the daily intake of carbohydrates is sufficient for the production of sugar. Of the other sources of the sugar, the proteids must first be considered. Does the knowledge of metabolism furnish any evidence of such an origin? Diabetics with severe glycosuria, when strictly dieted for a long time, continue to excrete sugar out of all proportion to the amount of carbohydrate ingested. If such a diet is also made poor in proteid the sugar in the urine sinks to a minimum or even disappears. If now albumen is added the sugar rapidly increases. Every busy practitioner has probably made observations of the same nature. Among physiologists E. Pflüger was the only one to dispute this doctrine, but he has recently acknowledged his error. It is now definitely established that sugar can be formed out of proteid, but it is still a difficult question to decide how the sugar is formed from the proteid. Kossel and Pavy believed that carbohydrates can be split off from the proteid molecule. The proteid is built up like a glucoside. This doctrine was not sufficient to explain all the facts. The carbohydrate group varies in the different albuminates, and is not large. The only proteids that contain much (20 to 30 per cent.) are the glucoproteids, mucin and ovomucin. The simple and much more common proteids, such as ovalbumin, contain at most from 10 to 15 per cent. Blood proteid contains 2 per cent., muscle proteid less than 1 per cent., while casein contains none at all. The percentage of sugar taken from the proteids ingested by diabetics is much higher than that which is found originally present in the proteid, being more than 50 per cent. Moreover, on a diet of casein, which contains no sugar in its molecule, the amount of sugar formed by the diabetic reaches its greatest extent. Ovalbumin which, of the ordinary proteids, is most rich in carbohydrate, yields the smallest amount of sugar. The conclusion to be derived from these facts is that there must be other groups of atoms in the proteid which yield the sugar. Such groups are the aminoacids, such as alanin, glycocoll, leucin. These are found in large amount in casein. If alanin is administered to a dog it is almost measure for measure transformed into sugar.

To explain the utilization of the aminoacids of the proteids, two alternatives present themselves. Either the aminoacids are regularly transformed first into carbohydrate before being oxidized, or else the transformation into sugar occurs only when the organism is in need of carbohydrate. The latter alternative is to be favored. In the normal individual ingested alanin appears almost wholly in the urine, while in the diabetic no alanin appears in the urine, but sugar does. The administration of different proteids permits the formation of different amounts of sugar in the diabetic. This question is important from the standpoint of dieting. On a diet of casein the most sugar is formed. Next comes meat; then the legumes; then egg albumen, and last of all the proteids contained in cereals. In severe cases of diabetes it is necessary to limit the amount of casein and meat in the diet.

The question of the origin of sugar from fats is difficult to answer. From the chemical standpoint it is explicable how sugar can be derived from the glycerin. The latter, as well as lecithin, increases glycosuria. As regards the formation of sugar from the higher fatty acids, there is no unanimity of opinion. Although from the chemical point of view it is difficult to conceive of the formation of sugar out of fatty acids, yet the reverse process, the formation of fat out of carbohydrates, does take place in the body. There are many examples of reversible processes in the body. The organism is able to split and build up proteid. There are anti-ferments as well as ferments. It has been sought to prove experimentally that sugar is formed from fatty acids. Seegen and later Bunge pounded liver substance together with fatty acids, and showed an increase in the amount of sugar present. With later improved methods the results have been negative. By means of another series of experiments, namely, feeding diabetics on fat, it was sought to prove that the latter is converted into sugar. Here the results were negative. Yet it must be borne in mind that it is not necessarily the fat taken as food that can be converted into sugar, but fat that has been stored up in the tissues may be thus converted. The fats taken in behave differently from the proteids. The latter are immediately disintegrated. The amount of fat oxidized depends on the amount of energy manifested, whereas, irrespective of the amount of energy put forth, the same amount of proteid in the tissues is uniformly burned. When more fat is taken in as food than can be burned up it is stored as fat. This easily explains how an increase of fat in the diet does not necessarily lead to glycosuria. It is essential to know how much of the sugar formed comes from proteids. The proportion depends on the form of the glycosuria. Thus in pancreatic diabetes 44 per cent. of the proteid is converted into sugar, while in phloridzin diabetes the proportion is 64 per cent. If the diabetic is kept for a long time on a carbohydrate-free diet, he excretes four times as much sugar as could be formed from the proteid represented by the urinary nitrogen. From this the conclusion is drawn that the sugar is formed from other sources than from proteid. In cases of the severer form of diabetes, in which there is no reserve of glycogen, one must regard fat as the source of the sugar. It must be confessed that in a few cases of diabetes more sugar is excreted than can come from the amount of carbohydrates and proteid available. I was convinced of this twelve years ago. We must think of a facultative diabetes. Ordinarily no sugar is

formed from fat. In diabetes, owing to the increased demand made for sugar by the tissues, fat may be converted into sugar. It is highly improbable that the overproduction of sugar is primary. Only in acute and transitory diabetes, such as that produced by puncture of the fourth ventricle, does it come into being. The secondary overproduction is important. The diabetic hunger of the cells is the signal for the formation of fresh quantities of sugar. The stored-up glycogen cannot supply the demand. The proteids are next utilized, and then the fats. Thus arises the secondary overproduction of sugar.

The question of the source of the acetone bodies is an important one. It was at first thought that owing to an abnormal decomposition the carbohydrates are the source. This theory was soon discarded. In diabetes acetone is not increased by a carbohydrate diet, but on the contrary it is really diminished. The theory that acetone is formed from proteids was for a long time unassailed. Acetone can be split off from proteid by acids in a test tube. But the quantity is very small. The quantity of acetone and diacetic acid that may be excreted in diabetes is so large in proportion to the amount of proteid disintegrated, as shown by the urinary nitrogen, that the proteid cannot account for it. In the last four or five years the doctrine that acetone originates from the fatty acids came into being, and the newer experimental results are in accord with it. It was at first thought that diacetic acid and oxybutyric acid have another source and significance. It is now recognized that the three form a series. The first of this is oxybutyric acid, $\text{CH}_3\text{-CHOH-CH}_2\text{-COOH}$. The second is diacetic acid, $\text{CH}_3\text{-CO-CH}_2\text{-COOH}$. The third is $\text{CH}_3\text{-CO-CH}_3$. The common name given to these is the acetone bodies. Although they occur in the urine in other diseases they never appear in such large quantities as in diabetes mellitus. The conditions necessary for the appearance of the acetone bodies are two in number. First, the acetone bodies arise from the fatty acids. Second, they tend to appear as the result of the exclusion of the carbohydrates from metabolism. It seems as if the presence of carbohydrates in the diet either prevents the formation of acetone or promotes its destruction. In the diabetic 80 to 100 grams of carbohydrate puts a stop to acetonuria. If a healthy man who excretes normally one to five centigrams of acetone cuts carbohydrates out of his diet, the amount of acetone increases fifty to one hundredfold, and diacetic acid and oxybutyric acid also appear. There are individual differences as to the amount of acetone excreted. Children and young adults excrete more than older persons. Those who habitually excrete acetone have a tendency in time to excrete less as the result of adaptation. Thus the Esquimaux, in spite of the complete absence of carbohydrates from their diet, do not excrete acetone. The same is true of carnivorous animals. It is impossible to produce acetonuria in the dog. But if the latter is fed for a long time on bread, and then his diet is changed suddenly to meat, acetonuria occurs. There is an acetonuria of inanition. The fasting man lives on his own body substance. The glycogen is exhausted. He then relies on the fat and proteid. Acetonuria ensues. He may excrete 8 to 10 grams of acetone per day. This substance may also appear in the expired air in which it may exceed the quantity contained in the urine. Besides inanition, acetonuria appears in the following conditions: Restriction or absence of carbohydrates in diet, high fever,

constriction of esophagus, and pneumonia. In the last condition, if the patient is given meat, bread and eggs, the acetone reaches a high figure. If he is given sugar water and fruit juice, the acetone diminishes to a trace. Acetonuria can be prevented in the non-diabetic. Acetone arises out of fatty acids only appreciably when the organism has not an opportunity to oxidize carbohydrates. The lower fatty acids, as well as the higher fatty acids, furnish its source. The relation between the fatty acids and the genesis of acetone has given rise to the belief that the fats ought to be cut out of the diet of diabetics. This is unwarranted, for the amount of fat decomposed in the body is independent of the fat ingested. Moreover, the excretion of the acetone bodies is hardly influenced by the amount of fat in the food. Yet 40 per cent. of butyric acid ingested might appear in the urine as acetone bodies. In severe diabetes, therefore, it is wise to restrict the use of butter. On the other hand, vegetable and beef fats are not contraindicated. Since water dissolves out the fatty acids, by kneading butter with water to dissolve out the dangerous fatty acids, the butter may be allowed in the diet.

FOURTH LECTURE—OCTOBER 12, 1905.

There are three stages in the excretion of acetone bodies. In the first, acetone appears alone, the quantity varying from .05 grams to .5 grams. In the next stage both acetone and diacetic acid appear; with .4 grams acetone the presence of diacetic acid is unusual; but with .5 grams acetone one seldom fails to find diacetic acid. The next stage is the appearance of acetone, diacetic acid and oxybutyric acid. There is an enormous increase of oxybutyric acid, from 30 to 40 grams, appearing to 1 gram of acetone.

Cases which six years ago were excreting from 50 to 60 grams of acetone bodies daily have been under the speaker's observation since, and they have enjoyed good health. The dangers of acetonuria center in diabetic coma. This is a matter of severe poisoning. Since Kussmaul first discovered the association of diabetic coma, with the appearance of large amounts of acetone, in the urine, numerous theories have advanced to explain this connection. Oxybutyric acid is the primary acetone body. The fatty acids which are its precursors are completely burned up in the normal body. When this does not occur, acidosis results. The normal body is capable of neutralizing the acid substances by means of alkalies. The ammonia set free by the breaking down of proteid serves to neutralize the acids. In normal urine 3 to 5 per cent. of the nitrogen appears in the form of ammonia; 85 to 90 per cent. appears in the form of urea. In diabetes 20 to 25 per cent. of the nitrogen appears as ammonia, while 60 to 70 per cent. appears as urea. The increased excretion of ammonia is an indication of the increase of acids in the blood, provided that alkalies are not at the same time administered. In spite of the fact that the acids are neutralized by the fixed alkalies of the tissues, the normal alkalinity of the blood is not attained. In diabetes this is 30 per cent. below normal. Acidosis affects the central nervous system most. Naunyn holds that coma is dependent on the degree of acid poisoning. A great deal of experimental evidence has been accumulated to support this theory. Yet it has its weak points. If true, one ought to be able to avert the ill consequences of acidosis by the administration of alkalies. For ten years past, alkalies have been given to diabetics in large quantities;

yet the ferric chloride reaction would still appear in the urine. Diabetic coma is not less common than it was at the beginning of that period. Its onset in many cases is deferred, yet it ultimately supervenes. There are, moreover, cases of diabetic coma, in which the blood gives an alkaline reaction. The kind of acid present in the blood, as well as of the amount, is significant. For a long time it was held that oxybutyric acid is not toxic, but this has been disproved by experiments performed in von Noorden's laboratory. Part of the diabetic intoxication is to be attributed to oxybutyric acid. Possibly among intermediate bodies may be found other poisons that produce this condition. The diabetic coma and the acid bodies may be the common consequence of the diabetic condition. This subject is of practical as well as theoretical interest. To reduce the amount of acetone bodies in the urine it has been advocated to limit the intake of fat and increase the carbohydrates in the diet. Yet, although an increase of carbohydrates ingested may cause a temporary diminution of the acetone bodies, yet, by aggravating the metabolic disorders that lie at the root of diabetes, the increased carbohydrates will cause an increase in the production of acetone bodies. The diabetic tissues are less resistant than normal tissues to adverse influences; hence, intercurrent affections have a more intense influence on the diabetic. The final coma is not something new; it represents the culmination of the diabetic process. It begins with drowsiness, mental haziness, dyspeptic symptoms, gastric hyperesthesia. These symptoms may extend over days or months. At first the patient can awake with an effort. Later he may be likened to one in an alcoholic stupor. The breathing, altered at first, finally changes to severe dyspnea. The pulse is quickened, but strong and full. Then the coma becomes complete, and 12 to 26 hours later, death ensues. Coma often attacks people who at the time feel perfectly well. Sometimes it is seen in one whose overtaxed brain has suddenly collapsed. Many acute infections favor the onset of coma. Among these are acute phlegmons, acute alcoholism, and chloroform and ether narcosis.

THE DANGERS OF PROGNOSIS OF DIABETES.

All patients have this symptom in common, namely, glycosuria, and although in all probability this depends on the same causes, yet the course and prognosis differ so markedly in different individuals that one would imagine he is dealing with distinct diseases. The variability is enormous. It is unfortunate that in the great majority of cases the disease is not recognized until it has advanced far and worked considerable havoc. It is rare for the disease to be discovered in its incipency. Traumatic diabetes, such as that resulting from injury of the brain, may thus be recognized. The glycosuria is only transitory. This is a true neurogenic diabetes, and most busy physicians have seen cases of it. In the great majority of this class of patients, however, is to be recognized a diabetes which has already been established. It is much more difficult to get information about the non-traumatic diabetes. Doctors and chemists who periodically examine their urine may thus note the beginning of the disease. The glycosuria is sporadic, coming and going, and may keep on in this way before the positive reactions become more frequent than the negative. Yet these people may be perfectly well many years later. The same is true of persons examined for life insurance.

In many of the cases of so-called early detection the glycosuria is transitory and shows itself under circumstances which would determine its appearance in normal individuals. It is well to take seriously every case of transitory diabetes; and by advising a diminution of the carbohydrates, guard against the possible final outbreak of the disease proper.

The circumstances under which diabetes is commonly discovered is that the patient presents himself complaining of neuralgia, or increased thirst, or frequent micturition, or mental depression, etc. These symptoms resist treatment. The urine is then examined and clears up the entire picture. Knowing how insidiously the disease develops it is the duty of the physician to examine the urine frequently. For the most favorable time for the treatment is the beginning. In some of the large factories of Germany the employees are examined quarterly; their urine is tested for albumin and sugar. This procedure will undoubtedly add facts of scientific interest to our present knowledge of the beginning of diabetes. Most cases, before they are fully developed, have transitory attacks of glycosuria, extending over a period of many years. Neglect of the slight cases favors the later onset of complications, such as arterio-sclerosis and dimness of vision due to neuro-retinitis, complications which are more to be feared than the primary glycosuria. Gangrene occurs most commonly in people who have had diabetes for a long time without taking any precautions. One should not be satisfied with a temporary diminution of the high sugar content of the urine, but should look for the permanent freedom from the same. There is no disease in which such satisfactory results may be expected, with the prospect of good health vouchsafed for a long period of years, as by the conscientious treatment of mild cases of diabetes. In many patients, as the result of treatment, the tolerance for the carbohydrates increases. Such cases can be spoken of as a true cure, although the patient has the germ for a fresh outbreak. In this respect the disease presents a close analogy to tuberculosis.

There are cases in which no cure can be obtained, although the further advance is stayed. This forms the larger number of cases. By careful regulation of the mode of life, in spite of the long duration of the symptoms, the patient may live comfortably for many years. This rule is not applicable to young people up to the end of the third decade. In children there frequently occurs a glycosuria which is temporary and of no account. If true diabetes occurs the end can be deferred only for a short time. In severe diabetes the urine is never free from sugar, in spite of the restriction in the intake of carbohydrates. At first 50 to 60 grams of carbohydrate are well tolerated, but the patient is sure to lose in time this tolerance entirely. Severe and slight diabetes are not identical with severe and slight glycosuria. As regards the general prognosis there is not a single case of diabetes in which a perfect cure occurs. But intelligent treatment will produce valuable results, and one should be contented if further mischief is prevented. There are many complications which are relieved by proper treatment of the primary disease. Thus, a patient in whom sharpness of vision was reduced to one-tenth recovered his full visual power in four weeks. Loose teeth may become firm, pruritus abolished and the muscles stronger.

(To be Continued.)

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-second Annual Meeting, held at the Academy of Medicine, New York City, October 16, 17, 18 and 19, 1905.

The President, J. Riddle Goffe, M.D., in the Chair.

THIRD DAY—OCTOBER 18TH.

(Continued from Page 804.)

Diagnostic Acids in the Feces.—Dr. Heinrich Stern, of New York, said that much definite knowledge could be obtained from a sample stool taken at random. If the feces are to be of use in diagnosis, as much care must be taken to secure a proper sample as in the case of the urine. Test feces are what pass through the rectum from thirty to forty-eight hours after the ingestion of a known quantity of the usual amount and kind of food. From this something can be learned both as regards gastric and intestinal digestion, though, of course, it is most valuable for intestinal digestion.

Changes Due to Gastric Indigestion.—Schmidt declared that whenever gastric fermentation takes place connective tissue appears in the feces. On the other hand, whenever connective tissue is found in the stools the conclusion must be that gastric fermentation is taking place to a considerable degree. This rule is not entirely true, however. In all feces small quantities of connective tissue will be found. When larger quantities occur, then it may be concluded that gastric fermentation is at work, and that there is serious disturbance of gastric digestion.

Pancreatic Digestion and the Feces.—It was hoped that the examination of the stools would reveal much with regard to the presence of bile and pancreatic secretion and with the extent of the disturbance of this latter gland, especially whenever any chronic pancreatic process was present. This expectation has, however, been unrealized. It is easy to recognize serious lesions of the pancreas because of the presence of neutral fats in the stools. Slight amounts of pancreatic disturbance, however, cannot be recognized readily, and occasionally even considerable degeneration may take place without a corresponding change in the stool.

Organized Malpractice Defence.—Mr. James Taylor Lewis, of New York City, told what organized malpractice defence does for the profession and for the public. He said that a few years ago the ratio of malpractice suits was one to every hundred and fifty doctors, or one to each doctor in every hundred and fifty years. At the present time this number has fallen to one to every two hundred and seventy-five doctors. Much of this is due to the development of organized methods for defence. The best of these is undoubtedly that the medical society of the State shall provide for such defence. Not infrequently doctors allow themselves to be blackmailed because of not caring to risk the publicity of malpractice suits. Not infrequently when the doctor's bill is sent a suit for malpractice is threatened if he attempts to collect it. This is often only a bluff, and every successful case will only lead to further annoyance in the matter. On the other hand, as surgery and the use of many physical agents, such as the X-rays, have advanced in medicine the professional mind is apt to be hampered in its judgment by fear of suits for malpractice, since accidents will sometimes happen in spite of the greatest care. At times the remark of a subsequent physician are the grounds

for the malpractice suit, and there is every need for physicians to be extremely careful.

Progress in Legislation and Organization.—Undoubtedly many malpractice suits would be done away with if the parties to them were compelled to file a bond for the cost before entering upon the action. As it is, they not infrequently default, throwing the cost upon the county. It is only the common variety of scoundrel who attempts these suits for malpractice, and the best possible deterrent is for him to find that the whole medical profession of the State stand behind each individual member of it to help him defend his rights. The shyster lawyers who take up these suits are very much discouraged if they once realize that every case is to be carried to the court of last resort in spite of cost, yet organized malpractice defence is not expensive. Certainly in a large society of over five thousand it need not cost more than fifty cents a year to each of the members. Even in smaller State Societies the expense would not be more than a dollar. As the result of the attempt to secure it in New York, Maryland has taken up the same scheme, and four other States are planning to follow. Evidently this is a great good that should be continued under the new régime of the Amalgamated Society.

SYMPOSIUM ON HYGIENE AND PREVENTIVE MEDICINE.

The first part of this symposium was occupied by a discussion of protection of the water supply of New York City and incidentally of the conditions of water supply of other cities. The symposium was opened by Dr. Thomas Darlington, the head of the Board of Public Health in New York City.

New York City's Water Supply.—Dr. Darlington said that the Croton water-shed, from which New York City obtains its water, contains altogether some three hundred and sixty square miles of territory. It is situated in Westchester and Putnam counties. Notwithstanding the chances for pollution that might exist in so large an area the diarrheal diseases in New York City have constantly grown less and less fatal since 1880. Typhoid fever has also been practically a decreasing quantity and an almost negligible factor in the death rate, certainly not due to the water supply. At the present time, however, there are dangers for New York's water supply greater than have existed before, and that make those responsible for the city's health tremble for the possible future of widespread infection through the drinking water.

Photographs of Possible Pollution.—Dr. Darlington then exhibited a series of stereoptic slides which show the possibility of pollution of the water supply. Near Mt. Kisco there is a small stream which runs along the railroad track, with all the possibilities of contamination which this presents, and on the other side are the back yards of houses, with privies not far from the stream. This stream empties into New York's water supply eventually. Another small stream is exhibited, showing cows crossing. There is a swamp not far from Mt. Kisco drained by a small stream, whose possibilities are serious to consider. Brewster's Station is over a small stream which eventually supplies New York with water. At Brewster the rear of some factories is just next the stream. Some distance away there is a barn on the edge of the stream; in another place there is a New York dwelling. These are only examples of the condition of affairs that exist in many places.

Responsibility for New York's Water Supply.—Unfortunately there is a very much divided responsi-

bility for the purity of New York's water supply. Eventually it may be said to rest upon certain local inspectors and upon the State Board of Health. The Health Department of New York City has not a mandatory position in the matter, though the health of over three millions of people depend upon the condition of the water in this region. The worst feature of the present situation is that those in charge of the sources of New York water, who should prevent its contamination, do not have to drink it.

New Laws That Hamper Further.—Every now and then a new law is passed that makes it even more difficult than before to be sure that New York will get good water. For instance, only last winter the law was passed allowing fishing and boating on the waters of any lake that New York might condemn for its water supply. Last winter, also, a law was passed forbidding that any land shall be condemned in Westchester or Putnam counties, so that if the city wants to prevent contamination it must go up as a private party and buy up the area required. It cannot secure the abatement of a nuisance except through the State Board of Health. The party may refuse to sell except at an exorbitant price.

Filtration.—The only remedy seems to be filtration. Typhoid fever and most diarrheal diseases can be absolutely done away with by this means. Philadelphia has eliminated typhoid in certain of its wards that used to suffer from it severely by supplying them with filtered water. Many foreign cities have wiped out the plagues completely. The price of land around the Croton water shed has advanced to such an extent that it is impossible now to obtain sufficient ground to protect the water supply amply. Land in the watershed used to be worth from twenty-five to one hundred dollars per acre. In many places now this advanced to one thousand and even three thousand dollars per acre. A farm that could be bought three years ago for \$15,000 sold for \$45,000 this year. It would cost seven hundred to eight hundred millions to buy up all the property necessary to protect New York's water supply for a long time.

Sources of Typhoid.—Dr. Ernest J. Lederle, the former Commissioner of Health of New York City, stated the sources of typhoid fever in about the order of their importance as follows: (1) milk, (2) shellfish, (3) uncooked vegetables, (4) imported cases, (5) secondary cases, (6) ice, (7) flies, (8) domestic water supplies, (9) public water supplies. With regard to the milk supply, New York City is ahead of any other city in caring for this, and, while there is no doubt that many cases occur from milk infection, the danger is ever growing less. Of shellfish, oysters are the most dangerous, because they are freshened in sewage-laden water. There are at present no statistics, however, which will determine how many cases of typhoid are due to this source. The uncooked vegetables are lettuce, tomatoes and the like, which can only be imperfectly cleaned before being put on the table. At times typhoid fever has been traced to the use of night-soil for the manuring of these. Dr. Prudden, of New York City, showed that the mere freezing of water did not kill the typhoid germ in it. As a result of his investigation a number of other investigations have been made, and now it is known that though the bacilli are not killed by freezing they gradually lose their vitality when kept in a frozen state for any considerable period.

New York's Typhoid Death Rate.—The mortality from typhoid fever in New York City is only 19 per

thousand deaths. Of 126 of the largest cities of the county only 20 show a death rate less than this. Only a few of the very large cities are among the better ones. Pittsburg has 120 per thousand, Philadelphia 50 per thousand, Baltimore 35, Boston 26, Detroit 18. It is not so much then for the sake of preventing typhoid fever that new sources of water supply must be sought in New York City. As a matter of fact, New York in time of drought sadly needs more water. This can perhaps best be realized from the fact that at one time a few years ago New York was within thirty-six hours of the limit of her water supply—that is, the water stored was only sufficient to last another day and a half unless rain came. Fortunately rain did come, otherwise the evils of a water famine can scarcely be too vividly pictured.

Dissatisfaction in the Croton Watershed.—The recent legislation for the protection of the property owners of the Croton watershed is the result of the decreasing dissatisfaction with New York City's health and water boards in the past. Formerly the city had a right to condemn and did condemn. After condemnation it was not unusual for the former owners to have to wait six and seven years for their money. Not rarely it happened that the money paid for the property was scarcely more than the expense of condemnation proceedings. As a result, whenever an officer from the New York City's Board of Health appeared on the watershed he was looked at askance. New York City had the right to require the abatement of the nuisance. This would cost money, yet without bringing any return to those living on the watershed. The spirit necessary to protect the water supply was entirely absent. The appointment of a water commission for the purpose of securing new water supplies for New York City, but at the same time of managing, so that all the cities of the State, even the smaller ones, shall have their due opportunities to secure water was a pioneer movement in New York. It was initiated almost immediately by Pennsylvania. Other States are now following in New York's footsteps. The solution of the water problem would seem to lie in the hands of this commission.

Typhoid Fever and Further Resources.—Mr. Henry Hopkins Adams, whose picturesque articles, based on personal observation and written with striking vividness, which attracted so much attention in some of the magazines, next discussed the possibilities of typhoid infection, even beyond the ordinary sources discussed. Even if any one city succeeds in protecting itself, if other cities do not, the cases will surely be imported. Typhoid fever is a rural disease, and so long as it exists in the country it will surely be brought to the cities. The tendency is constantly cityward. Even if New York had an absolutely perfect water supply as regards typhoid fever its citizens would still want to go away for their summer vacation. Likely as not they would come back full of health, but also of bad water, the result would be typhoid. Or some of the small boys would go swimming in the sewage-laden Hudson, at One Hundred and Fifteenth Street, and acquire it there, or, perhaps, at Bath Beach.

The Utica Experience.—Utica has an excellent water supply as regards typhoid fever; Troy has not, but is trying to better itself. A number of Italian laborers were imported into Utica from Troy. They brought typhoid fever with them. The stalls were emptied into the privy vaults of a portion of Utica, and here the flies got to them and proceeded to dis-

tribute them. Some of the distribution was carried to neighboring dairies, and before long typhoid fever began to develop along the milk routes supplied from these dairies. After a time the cases of typhoid fever discharged their secretions, which were carried through the sewers into the Mohawk and then eventually to Schenectady and finally back to Troy, completing the vicious circle.

Public Opinion and Typhoid Fever.—Prof. Victor C. Vaughan, of Ann Arbor, once said that whenever a person dies of typhoid fever someone should be hanged. If public opinion were molded more on this basis there would be less of typhoid fever. If the public conscience were aroused sufficiently to prevent contamination, then the disease would disappear. As it is there it too little sense of personal responsibility in this matter. The public do not realize that they may be permitting homicide. "If I put arsenic into my neighbor's soup, Jerome will get me, but I may poison the whole town of Butler, Pa., by means of typhoid germs without any serious results."

Justice and the Ironwood Story.—It is surprising that more is not known generally of the Ironwood experience with typhoid fever. Ironwood is a mining town in Michigan. Suddenly a large number of persons fell sick. The onset was so severe that there was some doubt whether it was typhoid fever. The water supply was blamed, but the superintendent of the waterworks blatantly proclaimed through the public streets that it was not the water supply that was at fault. Prof. Vaughan, of Ann Arbor, was sent for. He took samples of the water and also of the slime at the bottom of the reservoir. He agreed to telegraph the results as soon as they were found. Two days later his telegram was read in Public Square amid the hushed silence of nearly the whole male population. He said that the water was little better than liquid poison. Without any more ado and without any special pre-arrangement the crowd went over to the other side of the river in the little town, found the superintendent of the water company in a house of not very savory reputation and quietly took him out and hanged him.

Mr. Hopkins would not advise lynching for these cases of typhoid deaths, but the sense of justice of the mob is truer than that of civilized communities. At Ithaca, when there was a question of prosecuting the directors of the water company it was said that they were men of high character; as if a man's character should be the commentary on his acts, rather than his acts a commentary on the man. Popular education is needed, so that the ordinary citizen shall learn that it is cheaper to pay taxes and spend money for health than pay doctors', druggists' and undertakers' bills.

Protection of the Milk Supply.—Dr. Walter Benschel, of New York, said that New York receives 1,500,000 quarts of milk per day. Of this, 200,000 quarts is obtained within the city and the city's milk inspectors may properly regulate its sources. Outside of the cities, however, this was impossible, until very recently. Two years ago two of New York City's milk inspectors were appointed on the staff of the State Board of Health. This enabled them to investigate all the sources of milk supplied for the city and correct many evils. Dr. Benschel showed, by photographs, how a dairy, with cement floor and gutter that can be thoroughly washed out, may be eminently sanitary. He then showed, by contrast, some of the small dairies with connections of manure and rubbish all around them with cobwebs on the ceiling

and all sorts of opportunities for dust contamination, with only wooden floors and gutters that fail to carry off material, conditions which have gradually been corrected as the result of New York inspectors' insistence. All cows are milked inside, hence the possibilities of infection by dust. The pictures showed the conditions very well he said, but could not reproduce the odors.

SYMPOSIUM ON THE TOXEMIA OF PREGNANCY.

The afternoon session was entirely taken up with the discussion of the modern aspects of pernicious vomiting, eclampsia and yellow atrophy of the liver, their relation to one another and to the presence of some toxic element in the blood.

Acid Toxemia of Pregnancy.—Dr. Henry McMahon Painter, of New York City, said that there were great differences between the symptoms which patients suffer from as a consequence of acid toxemia. Some patients had only a slight nausea without vomiting or headache. Others had considerable headache with the nausea and some had but slight vomiting. From these to the cases in which there were extreme symptoms of almost insufferable headache and persistent vomiting there were many varieties. The symptoms are more likely to occur during the early months of pregnancy. In multiparae the vomiting may be so slight or so little noticed as scarcely to seem abnormal. Many patients are quite despondent, yet brighten up and become vivacious for a physician. Some sleep well all night and have their sufferings during the day. There are often neurotic symptoms present.

Suspicious Symptoms.—At first the pulse is likely to be only slightly disturbed, but after a time it may run very high. Giddiness of a severe character is not infrequently seen. These patients may wake up at night with the sensation of burning in bed. Unusually there is a small amount of urine, and the specific gravity is often high. The general rule is to have only a trace of albumin. The amount of solids passed in the urine are not as high as is usually said, even in healthy women. The text-books say 25 to 30 grams a day for male or female. It is not rare to find only 15 to 18 grams, with no disturbance of the general health. Leucin and tyrosin may be found in the urine, but they are rare and indicate intestinal indigestion.

Prophylaxis.—The most important part of the treatment is to prevent the development of acid toxemia to such a degree as will cause convulsions. The urine should be examined as often as once in ten days in suspected patients. Many of these toxemias begin as intestinal intoxications. The bowels must be kept regular, therefore, and great benefit can be derived from the free use of water. A quart and a pint of water should be taken daily, and careful questioning will often show what a surprisingly small amount of water the patients usually take. Women generally do not drink enough water. Drugs are not of much use, but the Swedish exercises and rubbings will be found of service, and there is no danger of terminating pregnancy. Indican in the urine is the best sign of intestinal intoxication, and it is rather easy to learn the test for it. Many a neurasthenic would be saved from the severer condition if this were recognized and the intestinal condition improved at the beginning.

Pathology of Eclampsia.—Dr. James Ewing, of New York City, said that for him, as is well known from previous papers, the three conditions of perni-

cious vomiting, eclampsia and acute yellow atrophy of the liver rest on essentially the same basis. He then demonstrated this by means of lantern slides, showing the forms of lesions that occur in these conditions. Hemorrhagic hepatitis is not an infrequent beginning, and then there are necrotic and fatty degenerate changes, which give characteristic details to the microscope pictures of more advanced stages.

Cause of Condition.—The cause of these conditions seems to be a failure of oxidation in the system. This can be determined by studying the nitrogen partition in the urine and observing that the nitrogen passed is not in the shape of urea, but various precedents of this substance, the most prominent among these are ammonia and amide substances. In order to determine this change in the urine, a twenty-four-hour specimen must be obtained, and it must be known what the patient has eaten. On a full diet there will be 85 per cent. of urea nitrogen in a normal individual. On a low diet, such as is not infrequently the case in pregnant women, because of the tendency to nausea, the urea nitrogen may not amount to more than 60 per cent. This must be taken into account in making the urinary examination, and there is no absolute proportion between the changes found in the urine and the extent of the pathological lesions and the clinical symptoms. Leucin and tyrosin are the best indices. They are not always present in these cases in the urine, but are usually found.

Pernicious Vomiting of Pregnancy.—Dr. Wm. S. Stone, of New York, said that for the milder cases of pernicious vomiting the usual remedies must be tried. The intestinal tract should be thoroughly cleansed, and large injections of water may be given and the stomach washed out. If the vomiting persists, however, it takes on the pernicious form, and then the only thing that will end it is the determination of the pregnancy. For this the rapid dilation of the cervix and the emptying of the uterus has been the most advised means, but there are beginning to be doubts about its applicability in some of the severest cases where the symptoms have affected the general health very much. The shock of the operation may of itself kill the patient. The administration of an anesthetic adds to the danger, and if chloroform is given the toxic process within the body seems to be intensified. All the portions of the fetus and its adnexa must be removed or the vomiting will continue. Dr. Stone has had a case in which a small portion of placenta was left with failure to relieve symptom. When this was removed the vomiting stopped.

Gradual Dilatation.—Dr. Stone thinks that lamina tents may again come into use for the gradual dilatation of the cervix in these cases. In Germany they are being used much more than a while ago. They have been discarded by the best men in this country, but it would seem that some of the faults that were attributed to their use might rather have been due to the imperfect aseptic technic of former days. Now it is easy to secure absolute asepsis.

Treatment of Eclampsia.—Dr. Bernard Cohen, of Buffalo, N. Y., said that while eclampsia is sometimes said to develop suddenly and without premonitory symptoms, often these premonitory symptoms will be found to have occurred when careful investigation is made. Women must be taught early in pregnancy to consult a physician and not to let suspicious symptoms pass by unheeded. The most important element is prophylaxis. Women must be

taught to be careful about their diet. It is surprising what articles will sometimes be found in the pregnant woman's diet. Veal and pork and all alcoholic substances must be forbidden. Whenever a headache persists, or whenever there are any swellings or puffiness of any part of the body, the doctor must be consulted. The physician himself must pay attention not to the kidneys alone, but to all the organs. Nature must have a free vent, and there must be thorough elimination. Calomel is an excellent drug occasionally, the frequent drinking of water must be advised, alkali water must be taken freely, massage is a good remedy.

Treatment After Convulsions.—Once a convulsion has taken place the question must be whether there shall be evacuation of the uterus or not. In the meantime put a roll of bandage between the teeth, give two drops of croton oil on a teaspoonful of olive oil and use morphine plentifully. Chloral and bromide may be given by the rectum. Normal saline solution by the rectum will increase diuresis and diaphoresis. Chloroform, if given at all, should be only for the moment, until the morphine acts. Of course, the most important element in the evacuation of the uterus is the securing of thorough asepsis.

Vaginal Cesarean Section in Eclampsia.—Dr. M. Stamm, of Fremont, Ohio, said that this method of operating for these serious cases, exploited recently by Dührssen, deserves the attention of the profession all over the world. It may be employed at any time when there is need of promptly emptying the uterus, when the mother is suffering from diseases of the heart and lungs, that threaten her life, or when uterus is pouches or is confined in the hollow of the sacrum or abnormal conditions for delivery exist because of the presence of tumors of the cervix. It must, of course, only be employed where the mother's life is in danger without it. It has been objected that the word Cesarean section cannot properly be employed of an operation in the vagina, since it was originally used for an opening of the abdomen. Long ago, however, Pliny pointed out that the derivation of the word was from *Cæsa*, meaning cut, and not from the supposed birth of Julius Cæsar in this way. If it is employed of the abdomen, it may be employed also of the vaginal vault.

Technic of the Operation.—The bladder and the rectum must be emptied, then the interior section is made directly in the medium line separating the bladder from the uterus. After this the posterior lip of the cervix is cut through into the cul-de-sac. The layer of the peritoneum between the bladder and rectum is then pushed up. When the incisions are made strictly in the medium line there is not much bleeding. The time required for delivery is about six minutes; and the operation may be finished in from twenty-five to thirty minutes. There is less danger than in the ventral Cesarean section. It is easier to obtain the consent of the patient and friends, and it will be obtained sooner. The operation should be done in a hospital, but has been done successfully in a private house. Dr. Stamm himself has done it once in a private house. Over a score of cases have been done in the last three years. The operation has come to stay. It must not be done where the conjugata is less than 7 cm., nor where there is a tumor of the pelvis.

In opening the discussion, Dr. J. Whitridge Williams, of Baltimore, said there is no doubt that there

are lesions absolutely typical of eclampsia, so that now, without knowing anything of the clinical history, the pathological specimens are sufficient to enable the investigator to say that the patient has died of eclampsia. Instead of one toxemia of pregnancy, there are probably three at least. There is one for eclampsia, another for pregnancy vomiting, the third for acute yellow atrophy. There are three varieties of eclampsia as seen clinically. One of these is due to some genital reflex and will be relieved by the removal of this. A second is neurotic and the third is toxic. In the neurotic type nothing will be found in the genitalia, nothing in the urine, and the patient will be cured in twenty-four or forty-eight hours by suggestion under proper conditions. When the type is toxic, the twenty-four-hour urine should be examined for several days. As the ammonia nitrogen arises in the urine toxic eclampsia becomes more threatening. Eclampsia differs from acute yellow atrophy by its lesions in the liver, since one has its pathological essence in the center of the lobule, the other at the periphery. One is thrombotic, the other is necrotic.

Vaginal Cesarean Section.—Dr. Williams believes that as a result of the recommendation of vaginal Cesarean section untold harm will be done. There will be an immense number of vaginal Cesarean sections made and reported where there is no need for them. It has its proper indications, but out of twenty cases of eclampsia seen at Johns Hopkins during the last two years only one was judged favorable for the operation, though Dr. Williams has been looking for an opportunity.

Eclampsia and Vomiting of Pregnancy.—Dr. J. Clifton Edgar, of New York City, said that these two affections seemed to him to be the same. There is no clinical index or laboratory test that will give proper warning as to impending eclampsia. Not much is known about the toxemia of the blood. Both seem to be due to faulty hepatic metabolism. The nitrogen partition in the urine is disturbed, but this is not always proportionate to the severity of the clinical symptoms. Clinical diagnosis is impossible, and it is dangerous to say that it is possible. Physicians were taught to rely on the urea index only six years ago, and now are likely to be deceived by this nitrogen partition test. The kidney does not always stand for so much in eclampsia. Two-ounce or four-ounce specimens of urine do not tell much. The diet must be known, and an examination made of twenty-four-hour specimens.

(To be Continued.)

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirty-first Annual Meeting, held at Indianapolis, Ind., October 10, 11 and 12, 1905.

(Continued from Page 813.)

Irritation of the Bladder.—Dr. A. Ravogli, of Cincinnati, Ohio, said that in many abnormal conditions of the genito-urinary organs and also of the urine itself this affection came on as a symptom in the form of the necessity of frequent micturition. This symptom could be produced by a number of intravesical and extravascular affections. In this condition the urination was so increased that it seemed the bladder could not tolerate the presence of urine. In some cases it occurred in the daytime only, in other cases at night, and in severe cases often in the day as well as in the night. The intervals be-

tween urination might be two hours, but in some cases the patient urinated every quarter of an hour, or even every five minutes. The patient would lose sleep, waste away, and was scarcely able to attend to his occupation. In reference to the causes, the urine might be the cause of irritation on account of its quantity or its quality. It might be too concentrated, contain urates, phosphates, sugar, etc., which maintained or kept up irritation of the bladder. The bladder itself might be the cause on account of an hyperemic condition. This hyperemia might be the result of vesical and of extravascular troubles, phimosis, urethritis, prostatitis, neoplasms, pericystitis, vulvitis, nephrolithiasis, etc. In other cases it was a pure neurosis, the consequence of epilepsy, hysteria, eclampsia. Since the urethroscope and the cystoscope had been used, cases of irritation of the bladder without pathological condition had greatly diminished, and in most of them there had been found either granulations or hyperemia of the mucous membrane. There were two kinds of irritation of the bladder, one which was a local neurosis, and another which resulted from pathological alterations of the bladder or of the urethra. The affection was a stubborn one, but the detection of the causes would help greatly in the selection of appropriate treatment.

Prostatectomy.—Dr. W. D. Haines, of Cincinnati, Ohio, said that two patients, aged respectively forty-two and fifty-nine years, with small indurated prostate with obstruction, occurring in his practice, did well after perineal section and the removal of the gland, in that the catheter was abandoned and a troublesome cystitis relieved. One of the cases suffered incontinence for a period of three months after operation, and the cure was incomplete, as residual urine was found in both cases, and this despite easy bladder access by the sound or catheter. The author condemned the use of metallic instruments in prostatics for diagnostic purposes, or for the relief of urinary retention, as the danger of perforation and infection far outweighed the meager information or temporary relief thus obtained. One could confidently hope for complete cure in 30 per cent. of the patients submitted to prostatectomy, namely, release from catheter bondage, relief from bladder complications and restoration of urinary function. In his experience with perineal prostatectomy seven patients had been functionally cured, nine showed residual urine, some of whom had had attacks of cystitis and dribbling, and five of these were suffering from incontinence six months to one year and a half after operation. Two patients required secondary operation, one for stone, and one for perineal fistula, making a total of sixteen patients, with ages ranging from forty-two to seventy-nine years, without mortality. While these results were far from ideal, the unfavorable physical condition present in the majority of them would in a measure militate against criticism as to the final outcome of this series.

The Operative Treatment of Tuberculous Joints.—Dr. Horace J. Whitacre, of Cincinnati, Ohio, advocated four kinds of operations for tuberculous joint disease: (1) Osteotomy for the removal of an epiphyseal focus; (2) erosion or arthrectomy of those cases, particularly in the young, where the focus was circumscribed and a fair amount of synovial membrane remained; (3) excision; (4) amputation. Osteotomy for the removal of a focus localized in the epiphyseal end of a bone was a

most logical operation. Six cases of rather extensive tuberculosis of the knee were treated by arthrectomy or erasion. In four of these cases a complete cure of the disease with a useful stiff joint and good position was attained. In three of the cases a slight amount of motion giving some assistance to the patient in locomotion was regained. In two cases amputation was subsequently resorted to. These subsequent amputations occurred in patients who passed from his observation very soon after operation. They undoubtedly represented recurrence in a spot where the dissection had not been sufficiently thorough. Excision for a tuberculous joint had been reserved in his practice for those cases in which the bone ends were seriously damaged.

Presidential Address.—The President, Dr. Bransford Lewis, in his address, considered two subjects: (1) Some unrecognized responsibilities of press and State in conserving health; and (2) the prophylaxis of the so-called venereal diseases. He called attention to quack medical advertising in newspapers and magazines, and said that news managers provided against discrimination frequently by making unworthy advertisements resemble as closely as possible the regular news material of the paper, or by setting it up as telegraphic matter. He thought the press was *particeps criminis* in presenting such fraudulent material. There was a widely disseminated and growing belief that matters pertaining to sexual physiology and pathology should be taught in a simple way to the budding youth of both sexes in the course of their regular education, in order to place them in a position to resist the temptations that beset young life, by the clearer understanding that such instruction would afford. He would make use of the educational channels of all sorts to spread the information desired in a scientific, dignified, truthful and wholesome manner, and such instruction would be received in the spirit in which it was imparted. It was primarily to the education of the people to which we must look for providing either the required legislation or the belated impulse for self-respect and decency on the part of the newspapers in eliminating quack advertisements. Another subject which he considered well worthy of attention was the determination of practical methods of protecting the people from the far-reaching and disastrous effects of those diseases generally termed venereal, but which were not uncommonly entirely innocent in their development. He referred to gonorrhea, syphilis and chancroid. These diseases prevailed to an extent undreamed of by the people and those in control of the public health of our country. He believed nothing was to be accomplished by prolonging a discussion as to the propriety of legal control and regulation of prostitution. Instead of trying to do what was impossible, to corral and disinfect all prostitutes, he would teach the public the dangers of prostitution, the dangers of the diseases to which it led, the prevalence of such diseases in daily life, and how they were acquired innocently, how they were to be avoided, and the necessity of seeking relief from them as soon as possible when they were acquired. The campaign of education must be the chief reliance, and the medical profession, followed by the ministry, instructors of institutions of learning in general, philanthropists and leaders in public work would have to be counted on as the purveyors of such education.

The Present Status of the Surgery of the Stomach.

—This was the title of the Address in Surgery, which was delivered by Dr. W. D. Haggard, of Nashville, Tenn. A discussion relative to operation for stomach lesions now was similar to that in regard to appendicitis twelve or fifteen years ago. Then only the desperate cases were submitted to operation. It was so now with many stomach cases. This, however, must yield to the logic of results and in a short time the profession generally would advise early operation, as they now well-nigh universally did in appendicitis. Improved technic, low mortality and satisfactory end results would inevitably do away with the empirical treatment of occult intractable stomach troubles. The typical indication for operative interference was obstruction of the pylorus from an open or cicatrized ulcer causing dilation of the stomach, with stasis of food. The short circuiting operation of gastroenteric anastomosis found its ideal indication here, and had given the most beneficent results. It was the *fons et origo* of the present group of drainage operations, as well as other gastric procedures, and was altogether the most perfected satisfactorily employed operative device. The other complications of ulcer requiring operation were pointed out as (1) perforation; (2) hematemesis of chronic ulcer. Operation was advised in repeated acute hemorrhage or in constantly recurring small hemorrhages. Other indications were found in the following groups of cases: (3) Obscure and persistent stomach symptoms with a long history of dyspepsia culminating in hemorrhage, after it had been controlled by medical means and the patient put in the proper condition for operation. (4) Cases of chronic intractable dyspepsia, even without dilatation, which failed to yield to proper medical treatment and were not due to a general visceral ptosis. The author gave a synopsis of the other stomach conditions for which operation was recommended. Aside from malignancy, chronic ulcer and its complications furnished most of the indications and the majority of cases. It was not impossible that the bulk of cases of inveterate dyspepsia was really due to ulcer. That it was found post-mortem so very many more times than it was recognized clinically was a reproach not so much to diagnostic measures as to failure to properly apply them. Dr. Haggard quoted Moynihan as saying that he did not know any operation in surgery which was more successful or which was attended by better or more striking results than gastro-enterostomy for chronic ulcer of the stomach. It was in duodenal or pyloric obstruction that gastro-enterostomy found its most striking indication and attained its highest efficiency. The many various methods for performing gastro-enterostomy gave a feeling of wonder at the ingenuity displayed. The relative safety of the operation even by varying technic was illustrated by Robson's results, namely, over 200 cases with a mortality of 3.6 per cent. The posterior operation had largely supplanted the anterior, because of the avoidance of the loop around the transverse colon and the mischief it caused. The anterior operation was reserved for malignancy, where the speediest technic was the best, where the stomach could not or should not be delivered freely and the operation was palliative in its intent. The Murphy button could be employed in gastric and intestinal surgery on account of its rapid insertion; while the McGraw elastic ligature found its best scope in such cases if an immediate opening was not

required. The posterior operation without the loop, with a longitudinal incision from one to three inches from the duodenojejunal angle, gave almost complete immunity from the vicious circle. The speaker quoted freely from the writings of those whose names are prominently connected and identified with gastric and intestinal surgery. A most logical operation for gastric ulcer was that proposed by Rodman of excising the ulcer-bearing area by pylorotomy. This stopped the possibility of hemorrhage, removed the lesion and cicatrices. This removed also all of the ulcers, as they were usually multiple and situated in the antrum pylori, which was also the cancer site. It removed any coexisting duodenal ulcer in the first two and a half inches. There were two classes of cases in stomach surgery that did not give good results, namely, (a) ulcer with an open pylorus, sometimes allowing the anastomosis to close and invited the repetition of the ulcer. (b) The neurasthenic, that most to be pitied of all non-fatal cases. The most crying need was some means for the early recognition of cancer of the stomach. Until the magic and immunizing therapy which would convert malignancy into benignancy was discovered, extirpation was the only resource in such cases. One-third of all carcinomata were in the stomach; and the average duration of life is nine months. Reference was made to the excellent results obtained by the Mayo brothers in stomach surgery. Mayo, in 114 malignant cases, had 21 deaths, or 18 per cent. There were 63 pylorotomies and partial gastrectomies, with 8 deaths, or 13 per cent. The worst cases had only a gastro-enterostomy, and the severity caused the high mortality. In his last 40 cases for malignant disease the mortality was only 5 per cent. As to ultimate results in 70 cases of resection, 4 lived more than three years, 3 were still alive and without return of the disease, a number were well after over two years, and the majority lived over one year.

(To be Continued.)

BOOK REVIEWS.

A MANUAL OF PRACTICAL HYGIENE. For Students, Physicians and Medical Officers. By CHARLES HARRINGTON, M.D., Assistant Professor of Hygiene in the Medical School of Harvard University. Third Edition, Revised and Enlarged. Illustrated with twelve plates in colors and monochrome, and one hundred and eighteen engravings. Lea Brothers & Company, Philadelphia and New York.

THERE is no other branch of medicine in which such substantial progress has been made within the past twenty years, nor in which such brilliant prospects of further advance in the near future present themselves, as in the science of hygiene. Indeed, it may be truthfully said that the physician of the future will be a practical hygienist. The subject-matter of this science is becoming so broad and comprehensive that the need of establishing special chairs in the larger universities for the prosecution of its study and for the more efficient instruction of the students in this important subject has been recognized and met. There is no other text-book with which we are acquainted that so ably answers the needs of the students of hygiene as the work of Prof. Harrington, who has efficiently drawn upon the vast amount of new material that has enriched this subject during the past few years. He has furnished a

book of extremely practical value to the busy physician, to whom is indispensable not only a knowledge of the modern advances in hygiene, but also the ability to apply some of this knowledge in his daily work. Nearly one-third of this book is devoted to the subject of foods. The extent of food adulteration practised at the present day is a matter that has roused the indignation of physician, sanitarian and publicist alike. It may surprise many who think that the Americans are the worst offenders to know "in Germany, preservatives are interdicted very strictly, except in beer intended for export; and the permission extended is accepted so freely that it is rare to find in this country a specimen of German bottled beer which does not contain a liberal dose of salicylic acid." The clinical symptoms of the various kinds of food symptoms are thoroughly detailed, and the numerous chemical methods for the detection of food adulterants are lucidly described. The color-plates accompanying these descriptions are particularly helpful for reference. A good deal of attention is devoted to the question of milk as a factor in the spread of disease, and the extensive literature recently contributed to this subject is carefully reviewed. The chapters on soil and its relation to disease, on air and ventilation, water, on habitations, schools, lighting, etc., are clearly of eminent value to the layman as well as to the physician and health officer. In handling the subject of disinfection and disinfectants, the author has availed himself of the most recent investigations. Military hygiene, the relation of insects to human diseases, the hygiene of occupation, vital statistics, and the hygiene of the person are all ably treated.

A chapter of 46 pages, whose subject-matter could separately form a valuable manual, is an entirely new addition to Dr. Harrington's work. It deals with infection, susceptibility and immunity. Few physicians have had the time to familiarize themselves with the numerous original writings on this vast subject, and still less have been able to follow the bewildering details of Ehrlich's side-chain theory. Many excellent little expositions of this subject have been recently published, but we know of none that explains this difficult branch of pathology so briefly and yet so thoroughly as the chapter in this book. The diagrams elucidating the text are particularly good. Within a few years there will be no excuse for any intelligent physician pleading ignorance to the meaning of receptors, toxophore groups, anti-complement, etc. It may be stated that there is no more intensely interesting a subject in the entire realm of medicine to-day than the modern doctrines of immunity.

On the whole, Prof. Harrington's book shows evidence of careful labor by one who has had practical familiarity with most of the subjects he discusses. Not a mere dry repository of facts, it enkindles the interest of the reader in a science which has achieved a phenomenal growth. It combines, moreover, the qualities of a text-book with those of a work of reference.

HEALTH AND DISEASE IN RELATION TO MARRIAGE AND THE MARRIED STATE. Edited by Prof. Dr. H. SENATOR and Dr. S. KAMINER. The only authorized translation from the German into the English language by J. DULBERG, M.D., of Manchester, Eng. Rebman Company, New York and London.

THERE is a rather general complaint at the present time that young folks do not seem to be quite as

ready to marry as in the past. Not only, however, is marriage delayed, but the marriage rate is lower in proportion to population than it has ever been. The last few years have seen the publication of a number of books with regard to marriage and disease, and more of them are announced. Most of them are not of a character to encourage matrimony either early or late in life, and this present text-book, the contributors to which are some of the most distinguished specialists in Germany, might almost be said to fulfil the famous advice of *Punch* to the man about to marry, "Don't." Among the contributors are Dr. Neisser, of Breslau; Drs. Hoffa, Posner, Eulenberg, Mendel and Moll, of Berlin.

Those who consider that the ordinary medical pictures presented in recent years with regard to the evil effects of gonorrhea upon marriage are overdrawn, should read the chapters, nearly a hundred pages in all, provided in the present work, on this subject by Prof. Neisser. Nothing is left to be added after his complete treatment of the subject.

Prof. Mendel, of Berlin, contributes some forty pages on the subject of insanity in relation to marriage. There is a very full discussion of the vexed problems of medico-professional secrecy in relation to marriage, and the discussion of such subjects as perverse sexual sensations, and alcoholism and morphinism in relation to the marriage state. Indeed, there seems to be no medical detail of the marriage relation that does not find very full treatment in the work. It has the advantage for English readers of being founded upon German jurisprudence, which allows divorce much more easily and readily than any of our States, except a few of the most lax in this respect. There is room and reason for annotations by an American editor acquainted with the divorce laws in this country.

CLINICAL TREATISES ON THE PATHOLOGY AND THERAPY OF DISORDER OF METABOLISM AND NUTRITION. By Prof. Dr. CARL VON NOORDEN, Physician-in-Chief in the City Hospital, Frankfurt-a-M. Authorized American Edition translated under the direction of Boardman Reed, M.D. Part VI. Drink Restriction (thirst cures), particularly in Obesity, by Prof. Carl Von Noorden and Dr. Hugo Salomon. E. B. Treat & Co., New York.

ALL of this series of little volumes are of extreme practical value, and the present volume yields to none of them in interest. For a considerable period it has been the custom to think that a restriction of fluids will bring about a reduction of obesity. The theories advanced to support the clinical observations in this matter, however, were not satisfactory. There is presented here an excellent discussion of the whole subject, besides a number of valuable suggestions as to the application of this method of treatment. Perhaps the subject will seem drawn out to the practitioner of medicine, but as yet some of the points are not definitely settled, and consequently a whole discussion of all observation is needed in order to decide their significance.

THE CRUX OF PASTORAL MEDICINE. The Perils of Embryonic Man; Abortion, Craniotomy and the Cæsarean Section; Myoma and the Porro Section. By ANDREW KLARMANN. Fr. Pustet & Co., New York and Cincinnati.

THIS volume is meant to be a manual of direction for the obstetrician with regard to the moral principles that are binding when there is question of a serious obstetrical operation which may imperil the life of the mother and child, or of both. Rev. Mr. Klarmann states very

distinctly how the principles that have been determined by the Catholic Church apply in many emergencies and trying situations. The book is very complete and, unlike many of the treatises on this subject, very direct and without any tendency to shirk the real difficulties at issue in every case. The author is, however, a rigorist, in the sense that he applies broad principles without sufficient allowance for human weaknesses. We are of the opinion that there are not many who would be as absolute as he in putting the mother's life in jeopardy where there is practically no chance of saving the life of the child. The whole subject is in many of its important points as yet *sub judice*.

PROGRESSIVE MEDICINE. 1905. Vol. III. September. Edited by H. A. HARE, M.D., assisted by H. R. M. LANDIS, M.D. Lea Brothers & Company, New York and Philadelphia.

THIS, the last issue of *Progressive Medicine*, contains summaries of the literature on Diseases of the Thorax and the Viscera, including the heart, lungs and blood vessels, by William Ewart; Dermatology and Syphilis, by William Gottheil; Diseases of the Nervous System, by William G. Spiller; and Obstetrics, by Richard C. Norris.

It differs in no essential respect from the previous summaries of former years. Like them, it is a reliable index of progress of medicine—an invaluable book to have for reference for the physician isolated from the great libraries.

FIRST ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT AND PREVENTION OF TUBERCULOSIS, February 1, 1903, to February 1, 1904. Henry Phipps Institute, Philadelphia.

DURING this year 254 patients were treated in the hospital, and nearly 1,800 in the dispensary. The work is now well-organized, the staff is large enough to permit careful history-taking and searching physical examinations, and the pathological department is ably supplementing the work of the clinicians. This first report, besides the details of work in the institution, includes "A Statistical Study of Tuberculosis in Philadelphia;" "Tuberculosis Work at Saranac," by E. L. Trudeau; "The Home in Its Relation to the Tuberculosis Problem," by William Osler; "The Morbid Anatomy and Histology of Pulmonary Tuberculosis," by G. Sims Woodhead; "Specific Therapy of Tuberculosis and Vaccination against the Disease," by Edward Maragliano, and "The Administrative Control of Tuberculosis," by Hermann M. Biggs, all these being lectures delivered under the auspices of the Institute.

BOOKS RECEIVED.

A MANUAL OF PRACTICAL HYGIENE. By Dr. C. Harrington. Third edition. 8vo, 793 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

THE PLAGUE; BACTERIOLOGY, MORBID ANATOMY AND HISTOPATHOLOGY. By Dr. Maximilian Herzog. 8vo, 149 pages. Illustrated. Bureau of Public Printing, Manila.

SYSTEM OF PHYSIOLOGIC THERAPEUTICS. By Dr. Solomon Solis-Cohen. Volume XI. Serumtherapy, organotherapy, radioactivity, with index. 8vo, 390 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

HEALTH AND DISEASE IN RELATION TO MARRIAGE AND THE MARRIAGE STATE. Edited by Prof. H. Senator and Dr. S. Kaminer. Translated by Dr. J. Dulberg. Volume II. 8vo, 1,257 pages. The Rebman Co., New York and London.